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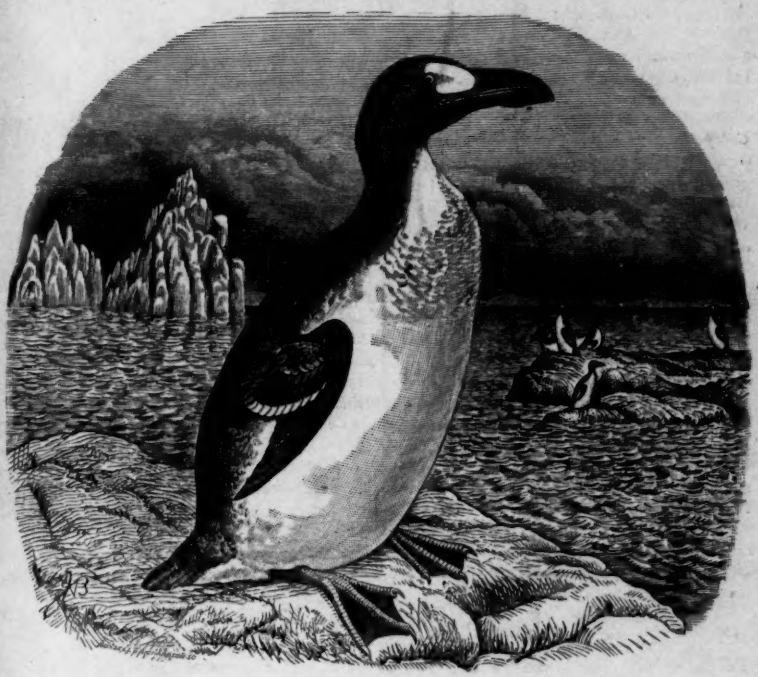

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CONTENTS.

PAGE

YOUNG SAPSUCKERS IN CAPTIVITY. By *Frank Bolles*. 109

OBSERVATIONS ON THE BIRDS OF JAMAICA, WEST INDIES. II. A LIST OF THE BIRDS RECORDED FROM THE ISLAND, WITH ANNOTATIONS. By *W. E. D. Scott*. 120

SUMMER BIRDS OF THE CREST OF THE PENNSYLVANIA ALLEGHANIES. By *Jonathan Dwight, Jr.* 129

A DESCRIPTION OF THE ADULT MALE OF *Botaurus neoxenus* (CORY), WITH ADDITIONAL NOTES ON THE SPECIES. By *W. E. D. Scott*. 141

HABITS OF THE BLACK-BELLIED PLOVER (*Charadrius squatarola*) IN MASSACHUSETTS. By *George H. Mackay*. 143

OUR SCOTERS. By *G. Trumbull*. 153

HYBRIDISM, AND A DESCRIPTION OF A HYBRID BETWEEN *Anas boschas* AND *Anas americana*. By *D. G. Elliot*. 160

DESCRIPTION OF A NEW TURKEY. By *George B. Sennett*. 167

THE DWARF SCREECH OWL (*Megascops flammeolus idahoensis* MERRIAM). By *Dr. C. Hart Merriam*. (Plate II.) 169

RECENT LITERATURE.— Packard's 'The Labrador Coast', 171; Lucas on the Osteology of the Paridæ, *Sitta*, and *Chamæa*, 172; Lucas on the Structure of the Tongue in Hummingbirds, 172; Lucas on the Bird Skeletons Collected by the U. S. Fish Commission Steamer 'Albatross', 172; Cherrie on Costa Rican Birds, 172; Shufeldt on the Osteology of Arctic and Sub-Arctic Water Birds, 173; Shufeldt on the Osteology and Classification of the North American Pigeons, Woodpeckers, and Kites, 174; Ridgway on New or Little-known Central American and South American Birds, 174; Ridgway and Bendire's Directions for Collecting and Preparing Birds and their Eggs and Nests, 175; Stejneger on a Collection of Birds from Japan, 176; Stejneger on the Cubital Coverts in the Birds of Paradise and Bower Birds, 176; Stone on the Birds of Harvey's Lake, Luzerne County, Pennsylvania, 176; Allen on the North American *Colaptes*, 177; Chapman on the Origin of the Avifauna of the Bahamas, 179; Chapman on the Grackles of the Subgenus *Quiscalus*, 180; Newton on 'Fossil Birds', 183; Sclater on the Geographical Distribution of Birds, 183; Sclater and Shelley on the Scansores and Coccyges, 184; Hartert's Catalogue of the Birds in the Museum of the Senckenberg Natural History Society, 185; Leverkühn's 'Fremde Eier im Nest', 185; Jäckel's Birds of Bavaria, 186; Minor Ornithological Publications, 187; Publications Received, 196.

GENERAL NOTES.— An Egg of the Great Auk, 198; Wintering of the Canvasback in Arizona, 198; The Pacific Eider in Kansas, 198; *Anas carolinensis* and *Gallinago delicata* in Winter, 199; The Migration of *Charadrius dominicus* in Massachusetts in 1891, 199; The Golden Eagle in Pennsylvania, 200; The Golden Eagle in Ohio, 200; Nesting of the Golden Eagle in Arizona, 201; *Melanerpes carolinus* in Madison County, New York, in Winter, 201; The Whip-poorwill Wintering near Charleston, South Carolina, 201; The Prairie Horned Lark (*Otocoris alpestris praticola*) Breeding in New Hampshire and Massachusetts, 201; The Prairie Horned Lark in Northeastern Pennsylvania, 202; A Correction, 202; Some Bird Notes from Litchfield, Connecticut, 202; Some Birds Recently Added to the Collection of the New York State Museum, 203; Winter Birds of Cape May, New Jersey, 203; Notes on a Few Louisiana Birds, 204; An Overlooked Volume, 206.

NOTES AND NEWS.— Plate of *Dendroica nigrifrons*, 207; The Audubon Monument, 207; A New Organization, 207; A New Monograph of the Birds of Paradise, 207; Ornithological Explorations, 208.

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DWARF SCREECH OWL
MEGASCOPS FLAMMEOLUS IDAHOENSIS MERRIAM.

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THE AUK:

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YOUNG SAPSUCKERS IN CAPTIVITY.

BY FRANK BOLLES.

As READERS of 'The Auk' may remember, I spent much time during the summer of 1890 in watching Yellow-bellied Woodpeckers at work in their 'orchards' near Mt. Chocorua, N. H. From my observations I drew the following conclusions ('The Auk,' July, 1891, p. 270), that "The Yellow-bellied Woodpecker is in the habit . . . of drilling . . . trees for the purpose of taking from them the elaborated sap, and in some cases part of the cambium layer; that the birds consume the sap in large quantities for its own sake and not for insect matter which such sap may chance occasionally to contain; that the sap attracts many insects of various species, a few of which form a considerable part of the food of this bird."

These conclusions differed so radically from opinions held by many ornithologists that some persons, who either doubted the sufficiency and unimaginativeness of my observations, or who read my conclusions without scrutinizing my statements of fact, were unwilling to admit that I had proved the Yellow-bellied Woodpecker to be a sap-drinker. In order to present additional and different evidence in the case, I determined to secure several living Sapsuckers, to cut them off as completely as might be practicable from insect food, to feed them if possible upon concentrated maple sap, and to see whether a diet of that kind would

sustain life. It was possible that they might refuse to eat anything, that they might eat the offered food but die in a few days, that they might live for a time but show distress and inability to digest the food. On the other hand it was possible that they might take kindly to the diet, thrive upon maple syrup, and live for weeks, perhaps months, in a manifestly healthy condition. I had confidence enough in my previous observations to believe that the birds would relish syrup, and would live upon it for a sufficiently long time to induce those who still considered the birds insect eaters only, to admit that a contrary presumption had been raised.

It was first necessary to secure the birds. Having failed in 1890 to catch old birds by making them tipsy, I decided to secure a nestful of young birds before they took to the wing. Searching the forest near 'Orchard No. 1' I found, on July 1, a nest filled with noisy fledglings whose squealing sounded afar in the otherwise silent woods. The hole was on the south side of a living poplar, about twenty feet from the ground. Two old holes scarred the trunk. The parent birds came frequently to the tree, and their arrival was always greeted by more vigorous crying from the young. On the 6th I visited the nest again and found both old birds feeding the young which were now much nearer the mouth of the hole. The old birds scolded me on my approach, and the young remained silent for a long time after hearing the warning notes of their parents.

On Tuesday, July 7, at noon, I raided the nest. The poplar was felled so that its top caught in a tree near by, preventing any shock to the young birds. In spite of the resounding blows of the axe the old birds continued to come to the nest, and in the intervals of chopping they fed the young. Moisture glistened on their bills, and I was not sure that they brought insects in any instance. One young bird flew before the tree fell, a second took wing as the crash came, but the third remained in the nest until taken out by hand. I named them Number One, Number Two and Number Three, corresponding to the order of their entry into active life. Their coloring varied sufficiently for me to recognize each with certainty after his transfer to a cage, and as weeks passed by they became more and more dissimilar both in coloring and conduct.

Their cage was an oblong pine box containing about three

cubic feet. Its floor was covered with sawdust, its face was closed by fine wire mosquito netting, and apple and alder branches were arranged for perpendicular and horizontal perches. A sliding door allowed me to handle the birds when necessary. During the afternoon of the day of their capture I fed each bird four times with sugar and water. Holding each little creature in my left hand I slid the tip of a small quill toothpick between its mandibles, when it quickly drank the few drops of liquid held in the half-filled quill. The second time I did this the bird opened its beak willingly. By the fourth lesson the rapid use of the long and nervous tongue in draining the quill of every particle of moisture showed that the quill was a satisfactory substitute for the parent's bill.

At 5 A.M. on July 8 the young Sapsuckers began a lively 'rat-tat, tat-ta-ta, tat-tat' on the resounding sides of their box. They were unmistakably hungry when, an hour or two later, I presented the point of the quill at a hole in the wire netting. One bird after another drank the diluted maple syrup with which I filled the tube. I repeated this process at intervals of about half an hour until evening, the birds becoming more and more expert in draining the quill and more and more prompt in responding to my offers of nourishment. Number One was the most restless and aggressive; Number Three the slowest in feeding, and the least hungry. It was also the dullest in coloring. On the 9th the birds did not begin to stir until about 7 o'clock, their cage having been darkened so as to prolong their slumber. On my presenting the quill all three tried to drink at once, and Number One was very rough with the others, striking them sharply with his beak. His violence led me to add a second room to the cage, into which the others could withdraw to escape him. I placed it directly above the other, with a round hole in the floor opposite a similar opening in the top of the first cage. None of the birds noticed the hole, either from below or from above, when put in the upper room. I placed cups of birch bark and wooden troughs filled with syrup in various parts of both cages, but the birds did not go to them. They took more syrup than on the 8th, drinking a greater number of times and more at each time. Towards evening I exchanged the quill for a slender spout of birch bark through which I let the syrup ooze. They drank from the spout, from the netting down which drops coursed, and

from the wood upon which the drops fell. Number One made his first attempt to catch a fly on the netting, but failed.

During more than half the day the birds were in motion, flying from one side of the cage to the other, hitching up and down the netting or the perpendicular perches, and pounding on the netting, boards and perches. Twice they gave the squealing note of alarm so characteristic of the wild Sapsucker. At night I looked to see how they slept. They were side by side, hanging erect upon the back wall of the cage, with their heads tucked under their wings. One by one they waked and turned with sleepy surprise to look at the lamplight glaring at the mouth of their cage.

On July 10 I made serious efforts to teach the birds to feed themselves. Catching them at intervals, I dipped their bills into the syrup in their cups, forcing them to drink. By 9.30 A.M. Number One had learned his lesson. Two hours later Number Two drank voluntarily, and a little after one o'clock the feeble and timid Number Three followed suit. Early in the afternoon Three seemed so exhausted by the blows showered upon her by One and Two that I thought she was going to die. I took her out and allowed her to perch upon the top of the cage. Suddenly she revived, slipped through my hand, flew the length of the open barn, out into the trees beyond, and was gone. After searching for her for over an hour, I gave her up as lost.

At 8 A.M. the next day I heard a Sapsucker squeal near the house, and running out found Three sitting on top of a clothesline post. She looked bright and knowing, but did not offer to fly, even when I extended my hand to catch her. Clasping her quickly, I carried her back to the cage. She was very hungry, and went at once to a cup and drank long and often. Her brief outing had given her courage to stand up against the attacks of the others, and I had no further anxiety for her health. I filled their cups at 8 A.M., 1 P.M., 4 P.M., and at dark,—the last as a precaution against unseasonable tapping in the morning.

During the next few days I filled the cups several times a day, and the birds drank freely, and seemed happy and perfectly healthy. On July 17, being satisfied that the birds never would learn to go up and down between the upper and lower cages, I removed the upper cage and placed it on the floor beside the lower one, opening a door between the two so that the birds

could hop through from one to the other on the same level. They did this at once. I then added a third room which could be entered by a door in its side, and found that the birds quickly availed themselves of the chance to be alone for a part of each day.

One warm day I sprinkled the birds with water. They were greatly astonished, but at once surprised me as much as I had them, for they flung themselves upon the floor and went through all the head, wing, and feather motions of a bath, scattering about chips and sawdust in a most energetic way. It was their first acquaintance with water. I at once supplied them with a large dish of water, in which they bathed occasionally during the summer,—usually, it seemed to me, towards evening, and when no one was near.

The smell of maple syrup which pervaded their cage of course attracted insects, which crawled up and down the outside of the wire netting, occasionally finding a crack in the cage and entering. The young birds were always on the alert to catch one of these intruders, and made a great fuss eating it,—squealing, and crowding into a corner to hold it securely between their breasts and the boards until they could swallow it in just the right way. The number of insects caught by them in this way was small, and I do not think amounted at any time to ten per cent of their food.

Within a week after the birds' capture I felt sure that Number Two was a male, because red feathers appeared on his throat. I surmised that Number Three was a female, partly on account of her more subdued coloring and partly from her gentleness. Number One bullied both Two and Three and was more noisy than they. By July 20 I had reduced the number of their syrup cups to one — a large earthern saucer which I filled once a day, sometimes twice. If I allowed the saucer to become dry, the Woodpeckers drummed more and more vigorously until I supplied their needs. Sometimes all three birds would drink at once. They were astir by 5.30 A.M., and still noisy at 8 P.M. On July 20 my notes say, "They are perfectly healthy and happy."

About noon on July 23 the door of the Woodpeckers' cage was opened by mistake, and not long after I discovered that

Three had escaped for a second time. I searched for her in vain. The next day rain fell in torrents all the forenoon. About one o'clock the cry of a Sapsucker was heard through the closed windows of the house, and Three was discovered clinging to the piazza railing just in front of my study window. She was wet and dismal. I tried to catch her with my hand but she flew to the nearest tree trunk, where I secured her by throwing a piece of soft mosquito netting over her. The moment I placed her in the cage she fastened herself beside the cup and drank many times. After satisfying her hunger she retired to the darkest corner of the cage to dry and doze. The other birds paid no attention to her.

On July 25 two Downy Woodpeckers were working in my orchard. Taking a trout rod and line, I made a small slip-noose at the end of the tip joint and poked it into the tree where one of the Woodpeckers was inspecting the bark. He watched the rod and seemed puzzled by it, but did not fly. Slowly lowering the noose I let it settle around his neck, and then by a slight jerk drew it tight. He flew in small circles round and round the tip of the rod, held by the noose, and slightly choked by it. A minute later, freed from the line, he was in the Sapsuckers' cage.

He was a young bird, like the Sapsuckers, and I supposed that the latter would not notice that he was not one of their own family. I thought it possible that he might follow their example and drink syrup from the cups, for I had once seen a Downy Woodpecker dipping at one of the Sapsucker's 'orchards.' Unhappily, however, the stranger was not welcomed kindly, and as I was called away for the day, he had no defender. The Sapsuckers pursued him from one corner of their cage to another, striking him fierce blows on his head and over his eyes until he fell to the floor exhausted. Reviving, he again attracted their notice and attack, but his second fall was his last.

About August 1 it seemed to me that the Sapsuckers were unusually restless; they whined and scolded a great deal and went from room to room incessantly. I think that at this season the wild birds begin to frequent their 'orchards' less regularly than in May, June, and July. The captives tapped a great deal, and I gave them a variety of things to play upon, as, for example, a sweet-toned glass tumbler, thin sheets of zinc, and resonant pieces of wood arranged to give out various tones. They tested

these things, but seemed to prefer the sides of their cage, especially portions walled with clapboards, which yielded a great volume of sound to their blows. I spent many hours in noting down the number and order of their taps, in order to see whether they constituted distinct signals. At first it seemed to me that Number One liked to tap in twos and fours, that Number Three was more apt to make threes, or threes and fives, than other combinations, and that Number Two mingled fives and twos. The longer I listened the more combinations I found them making, and at last I decided that with these birds it was mere chance whether they said -- ----, or --- ---, or ----- --. They seemed to pay no attention to each other's performances, and to mean nothing by their own tappings. If they tapped at all, it was necessary to make some number of taps and to space those taps in some particular way. If in a large number of such series, ones, twos, threes, fours and fives came equally freely and frequently — as they seemed to — there appeared to be no ground for imagining that the different combinations indicated different feelings or impulses. Nevertheless I think the old birds at Orchard No. 1 during July, 1890, called each other by tapping, and I do not feel at all sure that closer study than mine might not work out a Sapsucker code.

On August 9 I noted that the birds were "as noisy as a boiler factory," and that One and Three were showing reddish coloring on their heads. Three I speak of as "gentle and refined," but One is constantly alluded to as rough, noisy, and restless. I tested their color sense by placing some flaming nasturtiums in the front of their cage. They did not even look at them, but trampled back and forth over them until the flowers fell.

On August 13, a very warm day, I saw one of the Sapsuckers bathing at 7.30 P. M. when it was nearly dark in the cage. On the 14th — a rainy day — one of them bathed about 6 P. M. When the sun fell upon their cage in an afternoon the birds often sought the sunlight, and standing in it drooped their wings and opened their mouths as though suffering. They could readily have avoided its heat.

On August 17 I was away all day, and the Sapsucker's syrup dish became dry. Early on the 18th the birds began pounding so furiously that, as my notes say, "they could be heard a quarter of a mile away." When I filled their dish they crowded

around it, and all three drank at once. They consumed more than a tablespoonful of the diluted syrup between 7 and 11 A. M. Ordinarily they disposed of eight teaspoonfuls each during the twenty-four hours. Part of this evaporated, and part was probably secured by black ants which visited the cage by night. On August 25 I did not give the young Woodpeckers any syrup until late in the day. Then I offered syrup and insects at the same time. They ignored the insects and drank long and often of the liquid. Later they ate the insects. I kept a dish of water in their cage all the time, but they were seldom seen to drink from it.

On September 4 I placed the Woodpecker's cage in a finished room in the barn and opened their door to see what they would do with limited liberty. Number Three showed the effects of former freedom by coming first to the doorway and perching in it. After a moment One flew out past her and bumped against the window pane. Ten minutes elapsed before Two came out. Then they flew back and forth from window to looking-glass, curtains to woodwork. I handled them freely, and they seemed to have no feeling of fear. They clung to my fingers, and perched upon my shoulders. All the interior finish interested them, and they hammered wood and glass, paint and plaster with vehemence. One of them hopped back and forth over the board floor, striking it now and then as if it had been a great log, prostrate. Three caught a few of the many flies in the room, but showed no eagerness over them. The others scarcely tried to catch them. That night they slept in separate corners. In the night I lit a candle and looked at them. They awoke, squealed, and Three came to the syrup and dipped twelve times. The red on her head seemed brighter day by day. I also noted that Two was growing more yellow below. On September 6 I noticed that One and Three were together while Two remained much alone. He seemed to be moulting. During the next fortnight I let the birds out once or twice each day and watched them closely. Three was the only one which seemed to care much about catching house flies, and she secured very few. Black ants visited the cage at night, and occasionally I heard the birds moving about a great deal although their cage was as dark as it could well be made. By September 11 Three had transferred her affections from One to Two. The latter's plumage had by that time be-

come quite brilliant; the yellow and black below, and the red on head and throat making him a decidedly distinguished looking bird He made up for all Number One's earlier bullying and brow-beating by scolding him and driving him from perch to perch. When free in the room, Two and Three spent most of their time upon a great horizontal timber, a portion of the framework of the barn, which ran through the upper part of the room. It had been rough-hewn by the sturdy hands which had framed the barn many a long year before, and patches of bark still clung to its surface. The devoted couple ran up and down the upper surface of this beam, tapping from time to time upon its flat face, never upon its edges. One stayed in the cage much of the time when Two and Three were together. He seemed jealous and far from cheerful. None of them ever went back to the cage voluntarily, and as time passed they did their best to avoid me when I was ready to lock them up.

On the evening of September 12 the birds were very restless. Between eight and nine they were drumming furiously. The night was dark, and not a ray of light found its way into their cage. On September 16 they continued their hammering until 10 P.M. They took less syrup than usual at this time and caught practically no insects. On September 21 my notes speak again of the small quantity of syrup consumed by the birds. On September 26 the birds were brought to Cambridge in a small box. They were fed in the usual way, and drank frequently from their dish while the train was at rest. The next day they were given a room to themselves. It was eight feet by five and was lighted by a window looking into an upper entry. Opposite and above the window was a large skylight through which sunlight streamed into their room for several hours each day. They promptly chose the curtain roller at the top of the window as their favorite perch, and to this I attached their syrup dish, which they recognized and used at once.

For several days they seemed perfectly well and contented. They hammered the woodwork, cut holes in the plastering until they reached the laths, and drilled small holes in the floor. Absolutely no insects gained access to their room. On October 4 I state in my notes that they never seemed more happy or more energetic. They bathed freely at this time while I was in their room, and seemed to enjoy the water greatly.

On October 11 I recorded the fact that Three seemed dull and allowed me to catch her without opposition. On the 12th she was evidently feeling far from well and stayed on the floor, but Two and One were unusually cheerful. On the 13th Three showed alarming symptoms. As early as 7 A. M. she had a convulsion, throwing herself upon her back and struggling violently. Reviving, she drank some syrup and seemed better, but the spasms recurred at frequent intervals during the day. She kept her head moving up and down a great deal of the time. When a spasm was imminent she turned her head far around to the left and, with her neck thus twisted, spun around towards the left seven or eight times, then fell upon the floor and beat her head upon it. After most of these spasms she drank from her cup, and during the day she ate four flies which I gave her. The last attack was at 5.30 P. M., and not long after she was found dead. I placed her body in the hands of several graduate students in biology at the Museum of Comparative Zoölogy, and received from one of them, Dr. Thomas G. Lee, the following statement: "We found the intestines quite empty. In the stomach, which was deeply bile-stained, was a ball composed of cotton fibres and containing fragments of insects. The liver was very large, deeply bile-stained, and very soft. The other organs were apparently normal." The body was plump, and large deposits of fat covered the abdomen.

On Sunday, October 18, Number One, who had been dull for a day or two, showed symptoms similar to those of Number Three. He had several convulsions and was weak after them. I gave him lemon juice. For several days I had been trying to change the diet of the surviving birds, but they refused everything except their syrup and a fly or two which they seemed to care for but little. Among the things offered them were a sweet apple, a pear, a peach, grapes, and earthworms. I diluted their syrup more than usual, and put lemon juice with it. Number One's condition was such on the evening of the 18th that I had no hope of finding him alive on the next morning. He survived, however, although in a most pitiful condition; his eyes winked frequently, he seemed to see little, and that little in such a way as to confuse distances; his breathing was unnatural and he trembled constantly. Monday passed, and while One grew no better, Two became seriously ill. On Tuesday morning both birds

were alive, that was all. At eight o'clock Two had a violent convulsion and never recovered from it. A few moments later One, who had clung to life with such tenacity, died in the same way — maintaining to the last the advantage which he had first claimed in the nest. Number One was examined by an expert physician in Cambridge, who pronounced his liver enormous and in a diseased condition. It nearly filled the abdominal cavity, crowding other organs. It was soft and greenish. Number Two was forwarded to the Department of Agriculture which reported that the bird "had enlargement and fatty degeneration" of the liver. The most probable cause of this enlargement of the liver, which seems to have been the reason for the death of the three Sapsuckers, was an undue proportion of sugar in their diet. In a wild state they would have eaten insects every day and kept their stomachs well filled with the chitinous parts of acid insects. Under restraint they secured fewer and fewer insects, until, during the last few weeks of their lives, they had practically no solid food of any kind. Two of them lived in captivity exactly fifteen weeks, and the third fourteen weeks. During that time they subsisted mainly upon maple syrup diluted to half its strength with water. This diet was not refused nor disliked by them at the outset; quite the contrary, it was adopted readily. It did not cause speedy death, nor even indigestion. The birds did not mope and pine; they enjoyed life, changed their plumage as much as caged birds could be expected to do, and until nearly the time of their deaths manifested no abnormal condition. In fact they throve upon maple syrup and were in an apparently healthy condition for more than three months.

Summary. From these experiments I draw the following conclusions: (1), that the Yellow-bellied Woodpecker may be successfully kept in captivity for a period corresponding to that during which as a resident bird he taps trees for their sap, sustained during this time upon a diet of which from 90 to 100 per cent is diluted maple syrup; (2), that this fact affords evidence of an extremely strong character, in confirmation and support of the theory that when the Yellow-bellied Woodpecker taps trees for their sap he uses the sap as his principal article of food, and not primarily as a bait to attract insects.

OBSERVATIONS ON THE BIRDS OF JAMAICA, WEST INDIES.

BY W. E. D. SCOTT.

II. A LIST OF THE BIRDS RECORDED FROM THE ISLAND, WITH ANNOTATIONS.

(*Continued from p. 15.*)

98. **Colinus virginianus** (*Linn.*). BOB-WHITE. QUAIL. — The Quail was introduced from North America, according to Gosse (Birds of Jamaica, p. 328), about the year 1747, or nearly a hundred and fifty years ago. He says further, "It was very soon naturalized, and became abundant. It is found in almost all situations, where there is cover; and from its peculiar manners, its loud call, and the sapidity of its flesh, is familiar to all."

This was written in 1847, and many persons whom I met with while in Jamaica assured me of the great abundance of Quail until within the last two years.

During my visit to the island I did not see or hear any of these once common birds, and though in some localities, where especial attention has been paid to their protection, a few birds doubtless still exist, this bird once so plentiful must be regarded as about exterminated. I was particularly anxious to obtain a small series of the bird in question to see if any appreciable and general variation or departure from the parent stock had occurred under the new conditions of environment. However, I became aware in a very short time that it would be very difficult to get any of the birds, and so looked up what specimens existed in the museum of the Jamaica Institute. Here I found a single specimen, a female, without adequate data as to when and where it was captured, and I have been obliged up to the present time to forego the comparison which I had hoped material collected on the island would make possible. Mr. Taylor thought he would be able to procure some specimens for me, but in a recent letter dated July 3, 1891, from Kingston, he writes: "No news as yet of *Colinus virginianus*, though I have been constantly on the watch for and have made many inquiries respecting them." Oscar Marescaux, Esq., of Kingston told me that a single small covey still existed in the garden of his estate, Cherrygarden, near Kingston, but that these were the only ones he knew of. He said that the birds were formerly very abundant, and were hunted over the dog as they are in the United States, and that there was no difficulty in making large bags. Mr. William Bancroft Espent says in a letter dated Spring Garden, June 1, 1891, "Undoubtedly the mongoose has played havoc with the

Quail and other ground-nesting birds, but they (the Quail) are not exterminated, for I saw five Quail at Halfway Tree three weeks ago." These are the only personal records I was able to obtain, and one is of a negative nature and the other two support the story of their destruction by the mongoose. In the letter referred to Mr. Espent, in answer to my question as to where and how the mongoose was introduced, says, "I got nine, four females and five males on the 9th of March, 1873; others arrived subsequently, but I don't know how many. Mr. Morris in a pamphlet he wrote said he thought the entire mongoose population of Jamaica was due to my nine." From this it is apparent that coincident with the introduction of a few individuals of the mongoose began the disappearance of the Quail and that now, in a period of less than twenty years from the date of the introduction of a few individuals of the mongoose, the Quail, formerly very abundant, are practically exterminated from the island and no longer can be considered as a part of the bird fauna of the region.

The following notes are quoted from Mr. Taylor's manuscript records:

"The once abundant Quail has become so rare that by many it is regarded as extinct. It still exists in a very few exceptionally favorable localities, and it is not unreasonable to believe that from these, also, it will ere long be extirpated. That the evil is directly traceable to the mongoose there can be but little doubt, as prior to the introduction of this animal Quail were common even in the immediate vicinity of Kingston. The habit of depositing single eggs here and there appears to be common to this genus. Several eggs have been thus found, and I have taken one from the bare ground at the roots of a tree in a wood near which the birds were calling. It must have been lying some time, as it was quite discolored where it had rested on the decaying leaves, etc."

99. **Numida meleagris** *Linn.* **Guinea-fowl.** — This is also an introduced species which I have no personal knowledge of, save that I was told that they had once been common and now were almost unknown on the island. According to Gosse's account, written in 1847 (Birds of Jamaica, p. 325), "it was abundant in Jamaica as a wild bird, 150 years ago, for Falconer mentions it among the wild game in his amusing 'Adventures.' I shall confine myself to a few notes of its present habits. . . . . The Guinea-fowl makes itself too familiar to the settlers by its depredations in the provision grounds. In the cooler months of the year, they come in numerous coveys from the woods, and scattering themselves in the grounds at early dawn, scratch up the yams and cocoes." The account goes on to tell of the depredations caused by the great numbers of these birds, and various methods of getting rid of them are described and others suggested.

In contrast to all this I now quote from Mr. Taylor's manuscript notes recently sent to me from Jamaica: "Like the Quail this bird has decreased in numbers sadly, and from the same cause apparently. The

Guinea-fowl is now generally regarded as much less abundant than formerly, when large coveys were to be found in the lowlands and afforded good sport. Very recently, however, and on more than one occasion, I have met with a covey of wild birds near Kingston. At an unfrequented part of the Long Mountain Road, where perhaps not more than three or four persons pass in the course of a whole day, I twice saw a large party of these birds dusting."

100. **Columba leucocephala** *Linn.* WHITE-CROWNED PIGEON. — A common resident species in most parts of the island. At Boston it was abundant and to be seen or heard at all times of the day. Here they were associated together in pairs or in small flocks of from six to ten individuals. About the 20th of January at Boston the birds were generally mated and their constant cooing was to be heard at almost all points in the woods. Males taken about this date have the iris almost white with the faintest tinge of straw color. A female taken on February 9 had an egg in the oviduct about ready to be laid, and other females taken indicate that the birds generally are breeding or about to breed at this point.

The following are Mr. Taylor's notes: "Abundant and generally dispersed. Always to be found in the vicinity of water; the mangrove forests and woods bordering the river banks near Passage Fort were localities in which they were fairly abundant. Many nests of eggs were taken from the mangrove trees near the shore.

"Pigeon Island, a thickly wooded cay off the port of Old Harbor, takes its name from the large number of Doves that frequent it and breed there; from all accounts the Baldpate is the most numerous species. Like the other Doves they are very early breeders. More than one brood appears to be reared. Eggs may be taken as early as February."

101. **Columba caribea** *Linn.* RING-TAILED PIGEON. — In the wild and little settled portions of the parish of Portland, in the vicinity of Boston, these birds were common, but not so plentiful as *C. leucocephala*. Three females and a male secured at this point on January 16 were all apparently adult, but showed no signs of breeding as yet. The iris in these individuals varied from reddish orange to a deep, intense vermilion. Four birds taken at the same point on January 17 had just completed the moult, and three individuals taken later on the same day were still moulting, though the change was nearly completed. These birds do not appear to breed quite as early as the other Doves and Pigeons of the region. A pair taken February 21 at Boston were apparently mated and the female looked as if she would lay the first eggs in about two weeks. A pair taken on February 23 were about ready to breed. These birds frequent the hills back some little way and were most common at an altitude of about one to two thousand feet above the sea level. Here they feed on wild fruits and berries and become early in the year very fat, and are esteemed a great delicacy for the table. They were so common in the region spoken of that I frequently used them as food while at Boston. Mr. Taylor says that he has never had the opportunity of studying these birds in life.

102. **Columba inornata** *Vig.* BLUE PIGEON. — I did not meet with this

species while in Jamaica nor has Mr. Taylor ever seen the birds alive. Under the name of *Columba rufina* Gosse refers to this species at some length (Birds of Jamaica, p. 296). It is apparently not so abundant as it was in former years. None of the local hunters about Boston seemed to know anything about such a Pigeon, though they are familiar with the different representatives of the family that exist in the vicinity; and describe the kinds of Pigeons and Doves so that they are recognizable.

103. **Zenaida zenaida** (*Bonap.*). ZENAIDA DOVE. PEA DOVE.— A common resident species near Boston, and met with almost daily during my stay at that point. They feed generally on the ground, and are often associated with *M. leucoptera*. The iris is reddish orange. These birds are about the first of the Pigeons and Doves to breed. A male taken on January 6 had the testes almost fully developed, and females taken about the same time indicate the near approach of the breeding season. Subjoined are Mr. Taylor's notes. "Common in some parts. Breeds at Port Henderson among the low woods and mangroves. Eggs average smaller than those of *M. leucoptera*."

104. **Engyptila jamaicensis** (*Linn.*). WHITE-BELLIED PIGEON.—This was a common species in the localities frequented by *C. caribea*, but was by no means as abundant as that species. It is undoubtedly one of the native birds that have suffered seriously from the persecutions of the mongoose. The birds are rarely seen away from the mountains. Females taken on January 13 indicated the near approach of the breeding season. Mr. Taylor's notes are as follows: "A mountain species about whose habits I know little. The nest is said to be built chiefly in low bushes. I have not seen the eggs. The White-belly appears to be more terrestrial in its habits than any of the other Doves of Jamaica, the Ground Dove perhaps excepted."

105. **Melopelia leucoptera** (*Linn.*). WHITE-WINGED DOVE. — This was a common and conspicuous species at Boston, and more gregarious than the other Doves and Pigeons. Flocks of a dozen individuals were not at all uncommon, and on several occasions I saw flocks of as many as forty or fifty individuals. The species was represented, but was not common, at Stony Hill, and I saw the birds near Port Antonio in numbers.

Mr. Taylor's notes, which I quote, are very full in regard to these birds: "The White-wing is strictly gregarious, moving and feeding in flocks. It is especially partial to the seeds of the moringa or horseradish-tree, and numbers are often taken in traps baited with these seeds. At the Palisades is an extensive moringa plantation where these birds are numerous at all times of the year. Next to the Ground Dove it is the most common Pigeon in the lowlands. There is one locality in Kingston where they always may be seen, and that is the woods near the sea at Belle Vue, a property nearly adjoining the Lunatic Asylum. The White-wing is partial to clumps of cactus and thorny trees such as the cashaw for nesting purposes; it also breeds in numbers among the woods and mangroves at Port Henderson and Passage Fort, and I found nests

on Lime Cay near Port Royal. Eggs vary from dull white to reddish white, and may be found between the months of February and July."

106. **Columbigallina passerina** (*Linn.*). GROUND DOVE. — Common resident species, but not reaching up in the hills above five hundred feet. The subjoined notes of Mr. Taylor's show the near affinity of the Jamaican to the North American representatives in habits. The series that was collected during my stay on the island presents a race of birds that show little individual variation, but which differ markedly from Florida individuals. Both sexes are much paler, but especially the females, and the scaled appearance of the breast is much more striking and somewhat more extended. In size the birds are smaller than Florida individuals. So far these birds seem to agree very well with the *C. p. bahamensis* (Mayn.), but of all the individuals before me from the Island of Jamaica, some forty-one in number, only six (all females) have *dusky* bills, and in thirty-five examples (about equally divided as to sex) the yellow or orange base of the bill is very conspicuous. It seems, however, with the present material, better to leave fine discriminations in this group till more individuals from different points are available. From Mr. Taylor's notes I quote as follows: "Very abundant everywhere, but especially in the beds of the gullies or dry water-courses where little companies of from two to six or eight may be found feeding at almost any time of day. Their food in such places seems to consist entirely of the minute seeds of a shrub very common in all dry places, and known to the negro boys as 'vica.' The nest is invariably built on trees, usually at a good height; materials are merely a few slight twigs arranged to form a platform, and the eggs can be nearly always seen from beneath. Often the deserted nest of some other bird is used, and I once found a Ground Dove sitting on two eggs in the nest of a Mockingbird. Another favorite site is on the top, or in the fork, of a clump of cactus, but what appears to me the most remarkable situation for a nest is where the bird took advantage of a slight depression on top of a pendent tuft of tillandsia, 'old-man's beard,' and, after adding a few bits of grass, deposited two eggs. The presence of the sitting bird alone discovered the nest. When discovered sitting, or when young are in the nest, the old birds endeavor by falling to the ground and feigning lameness to draw the intruder away from the vicinity, and the same manners are practised by the White-wing. The Ground Dove is among the earliest breeders. I have seen nearly fledged young in March and April and have taken fresh eggs as late as June and July, so that more than one brood is probably reared in a season."

107. **Geotrygon montana** (*Linn.*). RUDDY QUAIL-DOVE. PARTRIDGE DOVE. MOUNTAIN PARTRIDGE. — Several times while at Stony Hill, and afterward quite commonly near Priestman's River, I met with this species. Adults taken on January 24 had just completed the moult. At the same time the testes in the males were large, but not fully developed to the size assumed during the breeding season. Males taken February 7 had the testes fully developed. By February 20 the birds were breeding,

From Mr. Taylor's notes I quote, and I fully agree with him, that this is one of the species that has become appreciably rarer through the influence of the mongoose. "I can give little or no information concerning the habits of the 'Partridge,' as I have never met with it near Kingston. The nest is often so slight and flimsy a structure as scarcely to suffice for the reception of the eggs, two in number, which are regularly oval and vary from pale to deep buff. This bird seems to prefer to nest in low bushes, and is reported to have suffered from the depredations of the mongoose."

108. **Geotrygon crista'a** (*Temm.*). BLUE DOVE. MOUNTAIN-WITCH. — During my stay at Priestman's River I received two specimens of this bird, and knew of one other that was killed during that time. The birds are apparently very rare, though formerly common, and, it seems probable, are becoming rapidly exterminated by the mongoose. The first specimen, procured on January 7, had not quite finished the moult. It was a male, and showed no signs of the approach of the breeding season. A second male was taken on February 14 and had fully moulted, though the breeding season seems at least a month later than with the other Doves and Pigeons. The birds are shy, and frequent the dense woods, most of the time being spent on the ground.

I quote from Mr. Taylor: "The Blue Dove is so exclusively a mountain bird that I have had no opportunity of observing it alive. It is reputed rare, and even extinct in some parts, but this scarcity must be more apparent than real, since the habits of the bird are so solitary and retiring."

109. **Starnœnas cyanocephala** (*Linn.*). BLUE-HEADED QUAIL-DOVE. — There are no recent records of this species from the island. From the 'Birds of Jamaica,' Gosse, p. 324, I quote: "The Spanish Partridge (*Starnœnas cyanocephala*) is not considered as indigenous in Jamaica, though it is frequently imported thither from Cuba. It may, however, yet be found in the precipitous woods of the north side; Albin, Brisson, Buffon, and Temminck, attribute it positively to our island."

During my stay at Priestman's River I was frequently told of a kind of Pigeon, locally known as the 'Red-neck.' The bird is described as a large Pigeon, larger than the 'Ring-tailed Pigeon,' and as being a *tree* Pigeon. At the same time its present great rarity is attributed to the mongoose's depredations. The bird was described to me by all the local gunners and hunters, and there can be little doubt of the existence of a Pigeon not obtained so far by naturalists who have worked on the island. Gosse (Birds of Jamaica, p. 324) refers to what appears to be this same bird under the name of "Red-necked Dove."

Mr. Taylor sends me the following note: "*Turtur risoria* is a common cage-bird in Jamaica, but I know of no instance in which it has been seen or taken in a wild state on the island."

110. **Cathartes aura** (*Linn.*). TURKEY BUZZARD. JOHN CROW. — Fairly common resident. Breeds. Said to have decreased greatly in numbers in the past few years, being preyed upon, like all other ground, and many low tree, builders, by the mongoose.

I quote from Mr. Taylor's notes as follows: "It has been asserted that the John Crow Vulture has suffered severely from the ravages of the mongoose, but in Kingston, at least, I have noticed no apparent diminution in their numbers. In and around Kingston hundreds roost all the year round, and certain favored trees have been resorted to for many years. As their numbers do not appear sensibly diminished, even during those months in which they apparently breed, I have considered that a very large proportion of the birds frequenting the roost at this time must be of the male sex. With respect to the oft-disputed point, sight *vs.* smell, in the Turkey Vulture, I wish to record one or two cases, coming under my own notice, which seem to me to prove incontestably the use of both senses, as circumstance may require. The dead bodies of poultry, cats, dogs, rats, etc., so frequent in the streets and lanes of the city, are as often as not passed over by the 'Crows' until decomposition has begun. If, however, the object is white or light-colored, it is quickly found. I once saw a good instance of this when shooting among the lagoons at the Palisades. In sailing down a narrow channel the boat grounded on a mud bank midway between the shores. A White Heron that had been fishing near the lee shore was shot while we were still aground. The bird had been wading deeply, and fell struggling on the water some little distance from the land, towards which it was drifted slowly by the wind and waves. A Crow almost immediately afterwards came in sight, and after flying round once or twice, alighted on the beach. Soon becoming impatient, the Vulture waded out into the shallow water, and seizing the Heron, dragged it ashore and into the bushes to devour it. Other cases have occurred where the carcases of animals have remained untouched until thoroughly decomposed, and this nearly always happens where the bodies are not wholly exposed. The Crow is certainly not a carrion eater from choice, fresh meat being eagerly taken whenever an opportunity offers, and when sore pressed young and weakly chickens, etc., are taken up."

111. **Catharista atrata** (*Bartr.*). BLACK VULTURE. — Recorded from Jamaica by March (Pr. Acad. Nat. Sci. Phila. 1863, p. 151).

112. **Elanoides forficatus** (*Linn.*). SWALLOW-TAILED KITE. — Recorded from Jamaica by Gosse (Birds of Jamaica, p. 19).

Mr. Taylor sends me this note: "There is a specimen (in a very mangled state) of the Mississippi Kite among the collection of skins in the Museum of the Jamaica Institute, but without any label to show when or where it was obtained."

113. **Buteo borealis** (*Gmel.*). RED-TAILED HAWK. — Common throughout the island. Breeds. Seen almost daily at Priestman's River, and frequently in the immediate vicinity of Kingston.

Mr. Taylor's notes are as follows: "The Red-tailed Buzzard appears to be common all over the island, a pair or more may always be seen hovering near pastures and commons and along the slopes of the lesser hills. I know nothing of the nest, but a friend to whom I am indebted for several notes, writes: 'They build chiefly on the huge silk cotton trees, and only rarely on bushes or trees of small elevation.'"

114. **Urubitinga anthracina** (*Licht.*). MEXICAN BLACK HAWK. — Recorded by Mr. Hill from Jamaica (see Gosse, Birds of Jamaica, p. 19).

115. **Falco peregrinus anatum** (*Bonap.*). DUCK HAWK. — Not met with. Mr. Taylor says: "I have not met with this Hawk on the mainland, but at the Morant Cays a pair or two were resident. One bird regularly roosted on the tallest cocoanut palm on Southeast Cay. I have an egg in my possession that I can ascribe to no other bird; it was taken from among a number of eggs of the Noddy and Sooty Terns offered for sale in Kingston; whether it was brought from the Morant or Pedro Cays I cannot determine with certainty."

116. **Falco columbarius** *Linn.* PIGEON HAWK. — Taken at Priestman's River on January 13 and 19. Both birds were females and these were the only ones obtained. From Mr. Taylor's notes I quote: "A not infrequent bird in the lowlands where it preys upon the Doves and smaller birds as well as lizards and such 'small deer.' Its flight is very swift and darting, but I have never seen it soar and circle like the Red-tailed Hawk. It is resident and breeds, but I have not seen the nest."

117. **Pandion haliäetus carolinensis** (*Gmel.*). AMERICAN OSPREY. — Noted at various points along the seashore in driving from Priestman's River to Kingston. Mr. Taylor regards it as a rather rare species and says further: "One bird seen near Port Henderson, and at the Morant Cays a pair were seen daily."

118. **Strix flammea furcata** (*Temm.*). SCREECH OWL. WHITE PATOO. — The Barn Owl was quite abundant in the vicinity of Priestman's River and in fact anywhere along the coast where there are meadows or fallow fields of much area. On moonlight nights I have seen the birds many times sitting along the road on telegraph poles or on some dead limb. They seem at such times quite fearless, and allow one to walk or ride close by without any attempt at flight. I am unable to be sure of their time of breeding, but think it is probably in October and November.

Subjoined are Mr. Taylor's notes. "The 'Screech Owl' is common wherever it can find suitable shelter. The small caverns and sink holes that are of such frequent occurrence in the limestone formation, as well as the forests of the mountain slopes, are favored haunts. For some time a pair of Owls resorted to the steeple of St. Michael's Church at Rae Town, and are probably there still.

"They often select strange localities for breeding. A pair tenanted for years the partially submerged hull of an old barque that lay at no great distance from the shore of the Palisades, and in the forepart of which they successfully reared their young. Lately I have been told of another pair that nested regularly in the recesses of the iron work under the large bridge crossing the dry river at May Pen in Clarendon and over which trains pass daily."

119. **Pseudoscops grammicus** (*Gosse*). DUSKY EARED OWL. BROWN PATOO. PATOO. — Not quite so common as the last, but still not at all rare in the vicinity of Priestman's River. It frequents the forests more than the Barn Owl does, and I did not meet with it hunting over the

large fields far away from any trees as was the case with the Barn Owl. Specimens were taken on January 14 and 16. Females taken on the latter date were about to lay. A pair taken on February 17 would have bred in about a month. A female parent and young bird just able to fly were taken February 23. The young bird is perhaps two months old. I think that the breeding season varies with different individuals from December to the last part of April. Both this species and the Barn Owl are of the greatest benefit to the agriculturists and they should be most carefully protected. Rats and mice form a large part of the food that they consume, and they must be of especial benefit on the 'pens' and sugar estates. The iris of this species is hazel or dark brown, looking much like that of *Syrnium nebulosum*.

120. **Amazona agilis** (*Linn.*). BLACK-BILLED PARROT. — Common resident in the parish of Portland. Especially conspicuous on the wild orange trees during my stay. They are quite nomadic in their habits, going about in parties of from six to thirty and even more individuals. In a fine series of this species obtained during my stay there are individuals without the scarlet coverts to the primaries. Others have some of these feathers green and some scarlet on the same wing; others lack the scarlet feathers altogether on one wing, but have them all scarlet on the other, and in many individuals the coverts are all scarlet on both sides. The black edging to the feathers of the throat, neck, and head varies greatly in different individuals, in intensity and extent, and in absolute width.

Mr. Taylor has had no opportunity, he tells me, to study this bird in life, and so can add nothing to the foregoing.

Gosse says that both the Yellow-billed and the Black-billed Parrots breed in holes in trees, but he does not state the time of year, and though this is probably in June, I have been unable to ascertain with exactness.

121. **Amazona collaria** (*Linn.*). YELLOW-BILLED PARROT. — What I have already said of the occurrence of the Black-billed Parrot in the parish of Portland applies equally well to this species. Just in the vicinity of Boston the Yellow-bills were much the more common, however. The individual variation in these birds is almost entirely confined to a greater or less intensity of color in different specimens, which seems to be correlated with age, but not with sex or season. During my stay at Boston a few hours' walk would always enable one to see flocks of these birds and often a few moments would be sufficient to walk to where a flock fed on the wild orange and other wild fruits and seeds.

Mr. Taylor's notes are subjoined: "Gosse regards this species as less abundant than the 'Black-bill.' My own limited experience and the information I have gathered from others does not support that view. At a property near the summit of Mount Diablo, where I stayed for a few days, large flocks of 'Yellow-bills' were seen feeding at the pimento trees. They were always very wary and difficult of approach."

122. **Conurus nanus** (*Vig.*). YELLOW-BELLIED PAROQUET. — I did not meet with this species while in Jamaica, where its distribution appears to be quite local, though where it does occur the bird is said to be com-

mon. Mr. Taylor tells me that he has never seen them alive, and that there are but few specimens in the collection of the Jamaica Institute. For a more detailed account of the economy of the species the reader is referred to Gosse, 'Birds of Jamaica,' p. 263, where the species is referred to as *C. flaviventer*.

123. **Ara tricolor** (*Bechst.*)? — There seems to be little doubt that a species of *Ara* has occurred on the island. It is the general opinion of some of the most intelligent native hunters that I talked with that a large red Parrot has been shot on the island, and that it still occurs at times. This last seems to me very doubtful. Mr. Taylor writes: "Jamaican examples not seen. All the domesticated birds I have seen appear to have been brought over from Cuba." The reader is further referred to the Gosse, 'Birds of Jamaica,' pp. 260–263, where a most detailed account of the occurrence of a species of *Ara* on the island is given.

(*To be continued.*)

SUMMER BIRDS OF THE CREST OF THE PENNSYLVANIA ALLEGHANIES.

BY JONATHAN DWIGHT, JR.

VARIOUS observers in the Virginias and the Carolinas have already called attention to the distinctly Canadian tinge of the fauna on the higher mountains of the Appalachian system, but until recently there has been little to show that like conditions prevail at much lower altitudes in the State of Pennsylvania. The present paper not only proves this most conclusively, as regards the bird life, but also brings together for the first time in a list those birds that make their summer home in the mountain region of the State. It is the outcome of two brief visits made at the height of the breeding season to some of the more elevated portions of the mountains.

The first occupied a period from June 18 to June 25, 1890, the localities visited being the vicinity of Altoona in Blair County and that of Cresson in Cambria County, at which latter place most of my time was passed. The second occupied from June 10 to 17, 1891, and this time portions of Luzerne, Sullivan, and

Bradford Counties were traversed, my longest stay being on North Mountain where several days were spent.

Previous observers, with few exceptions, do not refer directly to the region under discussion, nor have they always distinguished between summer visitants and migrants, so that they cannot be quoted for comparisons. There are two exceptions, —one an old record of careful observations made early in the forties by the Messrs. Baird* and the other Dr. Warren's recent volumes.†

The Baird lists are briefly annotated, but they illustrate how well such work could be done even fifty years ago. Breeding birds are marked with an asterisk, this often showing that an occasional species of the Canadian avifauna bred near Carlisle, which, it will be observed, lies on the easternmost slopes of the outlying ridges of the mountains. The majority of the birds of these lists are Alleghanian with a goodly sprinkling of the Carolinian types, while it is worthy of notice that, though the birds of my list are chiefly Alleghanian, the Canadian element is strongly marked, and nowhere, not even in the valleys, did I meet with Carolinian forms.

Dr. Warren's book (the 1890 edition) contains the only extensive and accurate information we have had concerning the bird life of the mountain regions. This, however, is scattered through the pages of a large book of a popular character, and the importance of many of the statements is not sufficiently emphasized.

Reference to almost any map will show that the Appalachian Mountain system enters southern and southwestern Pennsylvania in a series of parallel ridges which curve to the northeast and pass out of the State at its northeastern corner. The crest of the

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* List of birds found in the vicinity of Carlisle, Cumberland County, Penn., about Lat. 40° 12′ N., Lon. 77° 11′ W., by Wm. M. and S. F. Baird, Silliman's Am. Journal, XLVI, 1844, pp. 261–273; and Catalogue of birds found in the neighborhood of Carlisle, Cumberland Co., Pa., by S. F. Baird, Lit. Rec. and Journ. Linn. Ass. of Penna. College, I, 1845, pp. 249–257.

† Report on the Birds of Pennsylvania by B. H. Warren, M. D., 1888, and a later revised edition, 1890.

Since the above was written a paper has been published that bears directly upon the mountain fauna, entitled 'The Summer Birds of Harvey's Lake, Luzerne Co., Penna., with Remarks on the Faunal Position of the Region,' by Witmer Stone. Proc. Acad. Nat. Sci. Phila., 1891, pp. 431–438).

Alleghanies is the principal range, near the centre of the State; its sky line is seldom below 2000 feet elevation, and many points reach 2500 feet. Roughly speaking it may be said that west of this backbone of the mountains is a plateau region sloping away so gradually that much of northern and western Pennsylvania is at an altitude which, when combined with forest, cannot fail to attract birds of the Canadian avifauna. Eastward, on the contrary, this main axis dips sharply into the valley a thousand feet below, from which rises rather abruptly an even-topped range, and this in turn descends into another valley, so that a succession of narrow valleys and parallel ridges characterizes much of the eastern part of the State before the level country is reached. Some of these secondary mountains attain considerable altitudes, 2000 feet and more, but they lack the unbroken continuity of the main divide, and the southern extension of the Canadian fauna and flora is doubtless less marked upon them than upon the Alleghanies proper.

There was a time when the mountains of Pennsylvania were clothed with unbroken forest, the cool recesses of which afforded refuge for many species now found in reduced numbers in the few tracts of timber still untouched by the axe. At the present time the plateau region is in many places covered with farms, which often extend to the very crest line, and there is little suggestive of the top of a mountain range. Bits of the original forest, however, still remain in many places, and on North Mountain (which includes a large section of plateau in or adjacent to the southern part of Sullivan County) is found what is said to be the largest body of timber remaining uncut in the whole State. It certainly is a grand forest, large hemlocks, yellow birches, and maples predominating. There are also groups of white pines, and even a tract of spruces, which I was unable to visit, for roads are by no means the rule in this wilderness, and besides my time was limited.

About Cresson, which is over a hundred miles southwest of North Mountain, there still remain small bodies of timber, chiefly of oak, maple, chestnut, and beech, with here and there a hemlock. On Wopsononock Mountain, a few miles northeast of Cresson, lumbering is still carried on, but at the rate it is being pushed, here as well as on North Mountain, it will not be many years before the mountains will have been entirely denuded, and

with the forests will disappear many of the birds that now dwell in their shade. Cresson and North Mountain are characteristic spots to study the fauna and flora of the plateau region. The elevation of both places is very nearly the same, a little over 2000 feet; but while the latter represents the mountains in their original wildness, the former shows them in a semi-civilized state, after they have been stripped of forest and converted into a country of woodland and pasture. Of the intervening region I can only say that it probably partakes of the nature of both, the forest predominating.

On North Mountain the forest is truly primeval; the hemlock, the yellow birch, and the maple are the characteristic trees, and attain great size. The hemlocks are scattered in considerable numbers through the forest, and tower above it, their huge trunks, often four or five feet in diameter, marking them out as giants among their lesser brethren. The underbrush is often dense and everywhere great logs, covered with green moss, lie mouldering. Here and there you hear clear cold brooks that seem to imitate the song of the Winter Wren that is almost constantly heard along them. The drawling song of the Black-throated Blue Warbler and the sprightly one of the Canadian Warbler is heard on every hand. High up in the hemlocks the drowsy sounds of the Black-throated Green Warbler are heard, and the lively chatter of the Blackburnian Warbler catches the ear. Is not this a bit of northern Maine? You can easily imagine yourself there, although several familiar birds of that region are here missing. There are no White-throated Sparrows, nor Myrtle Warblers, so truly Canadian. The only civilized spot on North Mountain is the clearing of a few acres about a summer hotel on its extensive, almost level top, at an altitude of 2318 feet. Here it was that for the first time in my life I heard the Wood Thrush, the Hermit, and the Olive-backed all singing at the same time. The three species were abundant, and the music at sundown was a concert which for sweetness would be hard to excel.

There is a wild and rocky gorge down the eastern side of North Mountain, a most picturesque spot and one typical of the wilderness. Kitchen's Creek tumbles down something like a thousand feet in its course from the plateau above to the valley below, giving rise to a succession of foaming pools and noisy waterfalls of

great beauty. The trees growing from the precipitous rocks on either hand arch overhead, admitting occasional bursts of sunshine that dance in the clear and sparkling water. Here the tiny Winter Wrens were at home and were found along the brawling brook, as long as it was covered in by the forest shade. When, however, it emerged into the open farming country in the valley below (here many miles broad and of an elevation not exceeding 1000 feet), they and the Juncos and the Magnolia Warblers and all the other Canadian species were left behind in the coolness brought down from the mountain by the rapid stream.

Cresson and the adjacent country lack the wildness and inaccessibility of North Mountain. At Cresson may be found some of the densest of rhododendron swamps, but they are not extensive. Laurel also grows, but it is far more abundant on North Mountain where the rhododendron was not seen. There was an absence of forest-loving birds, although Blackburnian, Black-throated Green, and Black-throated Blue Warblers were to be found in the isolated patches of woods, particularly when they contained cold springs, and then Water Thrushes and Canadian Warblers were often present. There were some wet meadows at Cresson where a few Red-winged Blackbirds and a colony or two of Savanna Sparrows were nesting, and in general it may be stated that the species in greatest abundance were those of the open fields. At Gallitzin, a few miles north of Cresson, the charred stubs in clearings about coke ovens had their effect in soiling the plumage of many of the birds. Still further north along the crest of the mountains is a region of second growth oak, often 'scrubby,' where few birds were found, though the Chestnut-sided Warbler was rather abundant, and beyond this is Wopsononock Mountain, which has been nearly cleared of forest. Where fire has swept its broad top is a considerable tract of open 'barrens' grown up with blueberry bushes, sweet-fern, and brakes. Here I met with the only Mourning Warbler observed, and on its very top, among a few scattered yellow pines, I found a pair of Hermit Thrushes and a few Solitary Vireos.

At all the localities visited the Junco was constantly met with, even down to 1000 feet elevation, but was nowhere abundant. It may be regarded as a species typical of the southward extension of the Canadian avifauna which seems to be largely influenced

in distribution by the forest. The coolness of forest shade seems to be the equivalent of higher altitudes.

As June was well advanced at the times of my visits, it is safe to say that all the birds seen were summer residents. A good many young birds were on the wing, and the woods were full of song, so that it was possible to recognize and secure many species that otherwise would have escaped detection.

Unless otherwise indicated in the following list, it will be understood that the birds were noted both in the vicinity of Cresson and on North Mountain, and without doubt the intervening region will be found to contain practically the same species. This is already proved in part by the reports of observers in the intervening counties of Centre, Clinton, and Lycoming, as published in Dr. Warren's book.

Such species as did not come under my personal observation have been placed in brackets in the following list which I think shows that the mountain regions of Pennsylvania partake far more of the Canadian element than has been generally supposed. Here are some of the most distinctly northern species and many of them were abundant in suitable localities.

Sphyrapicus varius.
Empidonax flaviventris.
Loxia curvirostra minor.
Junco hyemalis.
Dendroica cærulescens.
Dendroica maculosa.
Dendroica blackburniæ.
Seiurus noveboracensis.
Geothlypis philadelphia.
Sylvania canadensis.
Troglodytes hiemalis.
Certhia familiaris americana.
Regulus satrapa.
Turdus ustulatus swainsonii.
Turdus aonalaschkæ pallasii.

None of the species in the list which now follows have been marked as breeding because, with a few obvious exceptions, *all* the birds mentioned undoubtedly nested within a short distance of the spot where they were encountered.

Ardea virescens. GREEN HERON.—One was seen on two occasions along a swampy brook at Cresson. There is little to tempt this species, or in fact any of the water birds, to the plateau region.

Ægialitis vocifera. KILLDEER.—A single pair was found in an open pasture at Cresson.

Bonasa umbellus. RUFFED GROUSE.—As might be expected this species was far more abundant in the forest on North Mountain than about Cresson. The ruddy tint of the tails was apparent, though but one speci-

men was secured. A brood barely able to fly was met with June 16 on North Mountain.

Zenaidura macroura. MOURNING DOVE.—A few were seen at Cresson, and some at the foot of North Mountain, in the valley eastward.

Buteo lineatus. RED-SHOULDERED HAWK.—A pair had a nest in a rhododendron swamp at Cresson. Its cry was heard several times on North Mountain.

Haliæëtus leucocephalus. BALD EAGLE.—A pair was seen June 18 circling about the rocky ledges of the Blue Ridge Mountains, one of the outlying ridges near Mifflin.

Falco sparverius. SPARROW HAWK.—It was not actually seen on the mountains, but was met with in the valley and doubtless occurs elsewhere. Hawks of all kinds seemed to be rare.

Syrnium nebulosum. BARRED OWL.—Every evening on North Mountain a pair would be heard calling to each other. No others were observed.

[**Nyctea nyctea.** SNOWY OWL.—It may be of interest to record the fact that a specimen of this species was captured one winter a few years ago near the hotel on North Mountain.]

Coccyzus erythrophthalmus. BLACK-BILLED CUCKOO?—While not abundant, this species was occasionally met with, though unfortunately none were secured. The notes heard were all referable to this species. Baird did not record it as breeding at Carlisle, where *Coccyzus americanus* was regularly found. Dr. Warren records both species as summer residents, presumably everywhere throughout the State.

Ceryle alcyon. BELTED KINGFISHER.—A single one was seen flying over at Cresson.

Dryobates villosus. HAIRY WOODPECKER.—Seen but twice and on North Mountain only. Dead trees were not abundant, except in some clearings near Gallitzin, and as Woodpeckers are generally in direct proportion to them, comparatively few were observed.

Dryobates pubescens. DOWNY WOODPECKER.—Detected in both localities; evidently not common.

Sphyrapicus varius. YELLOW-BELLIED WOODPECKER. — Occasionally met with on North Mountain only. Dr. Warren records this species as breeding rarely in Bradford, Lycoming, McKean, and Warren Counties, and perhaps Lackawanna, and it is marked without comment as breeding in Cumberland, Crawford and Sullivan Counties. Baird also marks it as breeding at Carlisle.

[**Ceophlœus pileatus.** PILEATED WOODPECKER.—While this species did not actually come under my observation, I learned of its occasional occurrence on North Mountain. Dr. Warren records it as resident in many counties.]

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.—A few birds seen almost daily about Cresson only pointed to the probability of its nesting.

Colaptes auratus. FLICKER.—Fairly abundant, a few being seen daily.

Chordeiles virginianus. NIGHTHAWK.—Not met with on North Mountain, probably because there are no clearings except about the hotel. Several seen at Cresson and vicinity.

Chætura pelagica. CHIMNEY SWIFT.—Rather common everywhere.

Trochilus colubris. HUMMINGBIRD.—Now and then one would be seen, but they were rare.

Tyrannus tyrannus. KINGBIRD.—Not seen on North Mountain, doubtless on account of the continuous forest, and not common at Cresson. It was more abundant in the valley region.

Myiarchus crinitus CRESTED FLYCATCHER.—One was seen on Wopsononock Mountain at perhaps 1800 feet elevation, and a few others were noted near North Mountain, in the valley.

Sayornis phœbe. PHŒBE-BIRD.—A few met with wherever there were houses, even near a deserted mill on North Mountain.

Contopus virens. WOOD PEWEE.—It was rare at Cresson, and very few were detected on North Mountain.

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER.—This species was found on North Mountain only, a few along the cold brooks. Dr. Warren states that many breed in Lycoming County and other mountainous parts of Pennsylvania. Baird did not meet with it in summer.

Empidonax minimus. LEAST FLYCATCHER.—Only detected in the valley, though there seems to be no good reason why it should not be found on the mountains.

Dr. Warren says: "I have been informed that Traill's Flycatcher has been seen in the mountainous parts of the State during the summer." The possibility of error in identifying the small Flycatchers is so great that the actual capture of the bird should be the only authority for stating its occurrence.

Cyanocitta cristata. BLUE JAY.—Rather common; noisy parties of young birds met with frequently.

[**Corvus corax sinuatus**? RAVEN.—It was well known to the people on North Mountain, but it is now very rare. Dr. Warren records it as resident in many counties.]

Corvus americanus. CROW.—There were no Crows on North Mountain and very few about Cresson.

Molothrus ater. COWBIRD.—At Cresson a single bird was noted.

Agelaius phœniceus. RED-WINGED BLACKBIRD.—A few were seen in a wet meadow at Cresson. More common in the valley.

Sturnella magna. MEADOW LARK.—Several seen each day, near Cresson only.

Quiscalus quiscula. PURPLE GRACKLE?—Seen at Cresson only, where a few bred. In the valley near Altoona (1197 feet) they were abundant. A specimen obtained proved to be a young bird, probably *quiscula*, and one male that I saw at a distance of thirty feet was evidently of this species. Still the crest of the Alleghanies must be somewhere near the dividing line between *quiscula* and *æneus*, and more material is desirable to determine which is the prevailing form.

Carpodacus purpureus. PURPLE FINCH. A few individuals were seen about the hotel on North Mountain. Dr. Warren states that this species breeds sparingly, particularly in the northern part of the State. Baird did not find it breeding.

Loxia curvirostra minor. AMERICAN CROSSBILL.—A flock of a dozen was seen on North Mountain June 16, and previously a couple had been heard flying over. Dr. Warren says of the species that it breeds regularly in several counties. Baird does not record it as a summer bird.

Spinus tristis. AMERICAN GOLDFINCH.— Several seen nearly every day, of course not in the deep woods.

Passer domesticus. ENGLISH SPARROW.—Found everywhere, of course, except on North Mountain, and I suppose it must be included in the list.

Poocætes gramineus. GRASS FINCH.—There was not enough open ground on North Mountain to attract this species which was one of the most abundant birds in the vicinity of Cresson and in the valley region.

Ammodramus sandwichensis savanna. SAVANNA SPARROW.—This species, which Dr. Warren mentions as rare and occurring in a few counties, was found at Cresson. A large colony was established in a wet pasture, and a few other individuals were encountered. Baird does not record the species as breeding.

Ammodramus savannarum passerinus. GRASSHOPPER SPARROW.—Several pairs were found in the same meadow as the preceding species, but occupying drier portions of it. In the valley region they abounded, but the wooded character of North Mountain naturally precluded their occurrence there.

Spizella socialis. CHIPPING SPARROW.—Common everywhere, even about the hotel on North Mountain, but not in the deep wood.

Spizella pusilla. FIELD SPARROW.—Fully as abundant as the preceding species, particularly where bushy fields attracted them. A few were in the clearing on North Mountain.

Junco hyemalis. SLATE-COLORED JUNCO.—The birds of the region approach a little more closely true *hyemalis* than they do the form *carolinensis* of the high mountains of North Carolina and Tennessee. The question is fully discussed by me in a recent article (see 'Auk,' VIII, 1891, pp. 290-292). The examination of additional material brings out no new facts. Some specimens are quite indistinguishable from *carolinensis*, but the majority differ little from northern specimens of true *hyemalis*. The birds are distributed all over the more elevated country, nowhere abundant, but a few were met with almost every day, whether in the forest or in the open. I found them sometimes as low as 1000 feet elevation. The males were in full song, thus constantly betraying their presence. Young birds were on the wing during both of my visits. Baird did not record it as breeding near Carlisle. R. M. S. Jackson in 1860, in a book called 'The Mountain,' containing a long list of the birds of this very region, said of

this species that "large numbers nest and permanently occupy the mountain." Dr. Warren states that it is a common resident on all the higher ranges. It has been also recently reported as breeding in the western part of the State, which, as I have shown, is nearly as elevated as the section under discussion.

Melospiza fasciata. SONG SPARROW.—Everywhere abundant except in the deep woods.

Pipilo erythrophthalmus. TOWHEE.—One was seen on North Mountain. At and near Cresson it was fairly abundant.

Habia ludoviciana. ROSE-BREASTED GROSBEAK.—It was only detected on the mountain side near Altoona and again west of Cresson.

Passerina cyanea. INDIGO BUNTING.—A common species at many points, even in the clearing on North Mountain. Baird does not record this bird as breeding at Carlisle.

Piranga erythromelas. SCARLET TANAGER.—Oftener heard than seen, but a common species.

Progne subis. PURPLE MARTIN.—Some nested at Altoona. There is every likelihood of its being found on the mountains.

Petrochelidon lunifrons. CLIFF SWALLOW.—A colony with perhaps fifty nests was noted under the eaves of a barn at Cresson, also another smaller one a few miles away.

Chelidon erythrogaster. BARN SWALLOW.—Common even on North Mountain where several pairs were nesting in the hotel barn.

Tachycineta bicolor. TREE SWALLOW.—Seen only on North Mountain where one or two pairs were nesting in the barn.

Ampelis cedrorum. CEDARBIRD. Rather abundant everywhere.

Vireo olivaceus. RED-EYED VIREO.—Very abundant, less so at Cresson.

Vireo solitarius. SOLITARY VIREO.—Abundant on North Mountain, as many as a dozen males being heard in the course of a day. Also found on Wopsononock Mountain, but not elsewhere. The specimens obtained show an approach toward *alticola*, but the plumbeous tinge of the back is only slightly more extensive than in true *solitarius*. Baird found it breeding at Carlisle.

[The impressions of Dr. Warren's observers that *V. philadelphicus* breeds in the State need confirmation.]

Mniotilta varia. BLACK-AND-WHITE WARBLER.—Seen only occasionally, but everywhere.

Compsothlypis americana. PARULA WARBLER.—Rather common in certain localities on North Mountain, and I thought I caught its song on the mountains near Altoona. Baird and Dr. Warren both record it as breeding.

Dendroica æstiva. YELLOW WARBLER.—A few were seen near Cresson only.

Dendroica cærulescens. BLACK-THROATED BLUE WARBLER.—About Cresson this species was found in the bits of woods grown up with an underbrush of rhododendrons, and was far less abundant than on North

Mountain where fifteen or twenty males would be heard in the course of a day. The young were apparently not yet out of the nest. It is reported as breeding by both Baird and Dr. Warren.

Dendroica maculosa. MAGNOLIA WARBLER.—Another common species, less so, however, than the preceding. Young were on the wing. Dr. Warren says that it breeds in many sections of the mountains. It was not found by Baird in summer.

Dendroica pensylvanica. CHESTNUT-SIDED WARBLER.—Rather common about Cresson and on Wopsononock Mountain, but only detected once on North Mountain where the continuous forest has no attractions for a species so partial to tracts of 'scrub.'

Dendroica blackburniæ. BLACKBURNIAN WARBLER.—It would be hard to say whether this species or *D. cærulescens* was the most abundant. There were times and places where both might almost be said to swarm. I obtained young. Baird and Dr. Warren both record it as breeding; the latter says "sparingly in the mountains."

Dendroica virens. BLACK-THROATED GREEN WARBLER.—Still another most abundant species, frequenting, like *D. blackburniæ*, the hemlocks. Found as low as 1000 feet in several different localities. Young were met with. Baird records it as breeding; also Dr. Warren who says it breeds in the northern tier of counties and in many to the south.

Dendroica vigorsii. PINE WARBLER.—In Bradford County, near Towanda, where the altitude is less than 1000 feet, scattered groups of yellow pines were full of Pine Warblers, but neither this species nor the pines (except a few on Wopsononock Mountain) were met with on the Alleghanies proper.

Seiurus aurocapillus. OVENBIRD.—A common species everywhere.

Seiurus noveboracensis. WATER-THRUSH.—Further evidence of the Canadian tinge of the avifauna is afforded by the common occurrence of this species along streams. The young were barely able to fly, and several vacated nests were found in the upturned roots of fallen trees. Dr. Warren states that it breeds in Lycoming, Centre, Clinton, and Clearfield Counties. In Baird's time this species was not distinguished from *Seiurus motacilla*.

Geothlypis philadelphia. MOURNING WARBLER.—A single male was found singing on Wopsononock Mountain where was an extensive well-nigh treeless slope of ferns. No doubt it can be obtained elsewhere in suitable localities, for Dr. Warren states that it breeds in a few secluded mountain districts. Baird does not mark it as breeding.

Geothlypis trichas. MARYLAND YELLOW-THROAT.—Common about Cresson, and one detected in a swampy portion of the clearing on North Mountain.

Sylvania canadensis. CANADIAN WARBLER.—There is little in a name, but this bird does happen to belong to the Canadian fauna, and seems in summer to be out of place in that of Pennsylvania. Still it is certainly abundant in all the localities I visited. Young birds were obtained. Baird records its breeding; and Dr. Warren says that it breeds sparingly in some of the mountains.

Setophaga ruticilla. AMERICAN REDSTART.—This species was not found at all on the mountains, and but few were observed in the valley region, still it seems strange that it should not occur higher up.

Galeoscoptes carolinensis. CATBIRD.—A few seen daily about Cresson; once detected in the clearing on North Mountain.

Harporhynchus rufus. BROWN THRASHER.—Frequently met with about Cresson and one on North Mountain; also in the valley region.

Troglodytes aëdon. HOUSE WREN.—A few observed about Cresson, though more numerous at Gallitzin, three miles away, where they frequented a clearing full of tall dead stubs. None on North Mountain.

Troglodytes hiemalis. WINTER WREN.—Observed on and about North Mountain only, where it was generally distributed throughout the forest, most abundantly in the damper portions. It was especially numerous along Kitchen's Creek. It is a species ever suggestive of cool, secluded forest and moss-covered logs, and its presence always betokens a northern tinge of bird life in the region where it is found. Dr. Warren records it as breeding sparingly in the mountains and northern part of the State. Baird did not find it breeding at Carlisle.

Certhia familiaris americana. BROWN CREEPER.—Occasionally observed on North Mountain, where a family of young birds was encountered, not elsewhere. Dr. Warren reports it breeding in the higher portions of the State.

Sitta carolinensis. WHITE-BREASTED NUTHATCH.—Occasionally observed, but not common.

[Dr. Warren says that *S. canadensis* breeds sparingly in the higher parts of the State, and this is not altogether improbable.]

Parus atricapillus. BLACK-CAPPED CHICKADEE.—Observed not infrequently.

Regulus satrapa. GOLDEN-CROWNED KINGLET.—Met with but once, a pair on North Mountain along Kitchen's Brook. Dr. Warren says of it: "My friend Prof. August Koch of Williamsport informs me he has occasionally met with this species and their young in August and September in Lycoming County. Perhaps future investigators will show that this species breeds sparingly in some of the extensive coniferous forests of our higher mountain ridges." Baird does not record this truly Canadian species as breeding.

Turdus mustelinus. WOOD THRUSH.—An abundant species, found in the woods to the highest points.

Turdus fuscescens. WILSON'S THRUSH.—Tolerably common about Cresson and in the valley at Altoona. Not met with on North Mountain itself, but seen in the valley eastward. Dr. Warren says that it breeds sparingly in the northern and mountainous parts of the Commonwealth, also in Northampton, Lackawanna, Crawford, and Erie Counties. Baird did not find it breeding at Carlisle.

Turdus ustulatus swainsonii. OLIVE-BACKED THRUSH.—Found only on North Mountain, but quite abundant there. I believe there is no record of this species being found in summer south of the Catskill Moun-

tains in New York, although Dr. Warren says it "breeds occasionally, it is said, in our higher mountainous regions."

Turdus aonalaschkæ pallasii. HERMIT THRUSH.—Among some scattered pines at the top of Wopsononock Mountain I found a pair feeding their young. As the abundance of this species can best be determined about sunset, when every male is pouring forth its evening song (and the same remark applies to *T. u. swainsonii*), I cannot say how abundant it is at this point. It was not encountered at Cresson, but in the deep woods of North Mountain it found a congenial home and was very numerous. Often it was possible to distinguish a dozen singing at the same time in the early morning or late evening hours. There was an overhanging cliff commanding a deep, narrow valley, whence at sunset even a greater number might be heard, their notes blending with those of the Olive-backed and Wood Thrushes. I have listened to the songs of all these birds many times, but never before have I heard all these species singing at the same time and had such opportunities for comparing their notes. I am satisfied that the song of the Hermit Thrush is more beautiful than that of the much-renowned Wood Thrush. There is a liquid, ringing sweetness about it, that is only matched in part by the song of the latter. The notes of the Olive-backed Thrush are inferior to both, although delivered with more swing and emphasis than either. The Hermit Thrush is one of the characteristic Canadian birds found in this region. Baird did not meet with it in summer. Dr. Warren says: "This species, it is stated, breeds sparingly in some of our higher mountainous districts."

Merula migratoria. AMERICAN ROBIN.—Abundant everywhere except in the deep woods.

Sialia sialis. BLUEBIRD.—Tolerably common and met with in the clearings on the top of North Mountain.

A DESCRIPTION OF THE ADULT MALE OF *BOTAURUS NEOXENUS* (CORY), WITH ADDITIONAL NOTES ON THE SPECIES.

BY W. E. D. SCOTT.

CAPTAIN J. F. MENGE of Fort Myers, Florida, procured for me during the summer of 1891 three specimens of Cory's Bittern (*Botaurus neoxenus*), and as one of these has the sex deter-

mined, much additional light is thrown on this little known form. Captain Menge saw, besides the specimens he procured for me, some eight individuals, one pair of which were breeding and had young and have already been referred to in this journal, Vol. VIII, p. 309. The male about to be described is not the dark bird of this pair, neither of which was taken by Captain Menge, but he tells me that in coloration one of the birds of the pair was identical with it, and that he has seen others of similar color. The other bird of this pair was in color like the type of *B. neoxenus*. In view of the new material and of the foregoing information, I believe that the four individuals heretofore collected are probably all females. Appended is the description of the three additional individuals, making a total of seven birds so far known of this species.

Adult male, No. 11,449, collection of W. E. D. Scott, taken three miles south of Lake Okeechobee and thirty miles east of Ft. Thompson, Florida, June 28, 1891, by Capt. J. F. Menge. General appearance throughout, both above and beneath, dark greenish black. The feathers of the lower neck alone having traces (edgings) of dark chestnut, their centres being of the greenish black tone prevailing throughout the bird. The belly is greenish black with no traces of chestnut, and the axillary feathers are greenish black. The central feathers of the belly near the vent, two or three in number, are pure white. The feathering of the legs is blackish chestnut, and on the right leg there are a number of cream-colored or whitish feathers.

No. 11,450, collection of W. E. D. Scott, taken at Lake Flirt, Florida, Aug. 15, 1891, by Capt. J. F. Menge, is a young bird of the year, and is like Mr. Cory's original specimen save that the entire belly is still covered with white feathers of a downy character and that the first primary of the right wing is pure white throughout; one of the axillaries of the left wing also is pure white. The legs where they are feathered are smoky brown in color behind, and pure white in front.

No. 11,451, collection of W. E. D. Scott, taken at Lake Flirt, Florida, July 15, 1891, by Capt. J. F. Menge (believed by Capt. Menge to be a female) is very like Mr. Cory's original bird save that there are traces on the sides of the back of lines, much obscured, but of a general brownish tint, thus approaching *Botaurus exilis*.

In view of the small amount of material so far extant it may be premature to hazard an opinion regarding this bird, but I feel impelled to record the strong impression that I entertain, that it will ultimately be found to be a color phase of *Botaurus exilis*.

HABITS OF THE BLACK-BELLIED PLOVER (*CHARADRIUS SQUATAROLA*) IN MASSACHUSETTS.*

BY GEORGE H. MACKAY.

THIS distinguished-looking bird, the largest of the Plovers, is nearly cosmopolitan. It ranges in the Western Hemisphere as far south as Brazil, New Grenada and Peru, with a corresponding limit in the Eastern Hemisphere in Australia and New Guinea. It is said to breed on the marshes above forest growth at the delta of the Lena River in northern Siberia, in the valley of Pechora on Taimyr Peninsula, northern Russia, on the banks of the Anderson River, and on Melville Peninsula in Alaska (Seebohm's Plovers, p. 103; Baird, Brewer, and Ridgway, N. A. Birds, Vol. I, p. 132).

In summer plumage the adult male is black from around the base of the bill to the eyes, fore neck, and under parts of body; abdomen to end of tail white; axillars black; forehead and fore half of crown creamy white to white; a broad white line or band running from the sides of the head over the eyes, down the sides of the neck, and enlarging and encroaching into the black on the breast where the neck joins the body, sharply defined in front by the black, but blending into the plumage of the neck and back (this white line or band is the most prominent feature of their plumage as seen from a distance); sides of the neck and rump ashy gray; back and hind half of crown whitish, covered with small irregular spots of brownish black; upper tail-coverts barred with brownish black. The legs and bill are black; small hind toe. The adult female is rather smaller than the male; the plumage of the top of the head, back of the neck, and back, is duller with more brownish, not being so defined as in the male; the fore neck, breast and lower parts, interspersed with brownish to black, and white, feathers; abdomen white. They never have the clear crow-black fore neck and breast of the males, nor is the white band or line of the forehead and sides of the neck so prominent. As a whole their plumage lacks that clearly defined

* Read before the Nuttall Ornithological Club, Dec. 7, 1891.

pattern so distinctive of the adult male. The young birds, commonly called Beetle-heads, Chuckle-heads, or Bull-heads, have the entire upper parts brownish gray-black covered with irregular spots of white and pale yellow, which last color varies in different specimens; under parts white; the fore neck and breast dull white with longitudinal, short, gray lines; axillars dusky brown to black. I have at times shot large specimens of young American Golden Plover (*C. dominicus*) — Pale-bellies as they are called — which quite closely resembled small specimens of young Black-bellied Plover (*C. squatarola*), or Beetle-head, but the dusky or blackish axillars and the presence of a hind toe in the latter will always distinguish them from the former.

It is stated, or at least implied, in most ornithological works that the plumage of the adult female is the same as the male's; it will be noticed that I have described it differently. I now desire to call attention to the universal statement current in the literature of the subject that the adults assume what is designated as the winter plumage, that is, gray above and white underneath, similar to the plumage of the young birds. I cannot but believe that such statement is an error of long standing, it being my conviction that such gray and white plumage is confined exclusively to the younger birds, and is retained by them in varying stages up to three or four years of age, or in other words until such time when they change it (never to reappear in it) for that which is known as full spring plumage. Birds with light-colored breasts without any, or with very few, black feathers, are seen to a greater or less extent every spring. I have yet to see an old bird from any locality in any season, in the gray and white plumage. Lest I may be misinterpreted, permit me to add that as these birds do not, in my opinion, reach the height of their plumage until they are three or four years old, my remarks apply only to birds of that age or over. Mr. George A. Tapley of Revere, Mass., who is a close observer and has probably shot as many of these birds as any one in Massachusetts, and whose shooting experience extends over a period of about fifty years, informs me that he has shot the old birds in full plumage on Cape Cod, Mass., on July 28, 29 and 30. He says he never saw an old bird in the gray and white plumage, but has shot old and young birds together. Mr. Charles G. Kendall, also a sportsman and a close observer, has passed the last twenty-five winters in South Caro-

lina. In reply to my inquiry asking for his experience in that State he writes me; "A few Blackbreasts always winter on the coast of South Carolina, and I see a few almost daily every winter on the marshes near my residence. There are as many full, *deep black*-breasted birds in winter as in spring or summer. I see no reason for believing that the fully adult birds ever again assume a gray plumage. . . . . In the spring I have occasionally shot specimens with blotchy or mottled breasts, evidently changing to full plumage from gray."

In addition to the above I have thought it might prove interesting to have descriptions of a few individual birds to serve as illustrations. Through the kindness of Mr. William Brewster of Cambridge, Mass., I am able to refer to some examples in his collection. Specimen No. 29,626 was taken Aug. 29, 1890, at East Marshfield, Mass.; it is a male. The entire lower parts of this bird from the bill to the abdomen are coal-black with the exception of a few small white feathers interspersed. No. 19,170 was taken Sept. 3, 1888, at Monomoy Island, Cape Cod, Mass.; it is a male. This bird is black and white on the breast and would be said to have nearly arrived at full plumage. Specimen 19,171 was taken Sept. 6, 1888, at Monomoy Island; it is a male, and is black on the breast with the exception of a few white feathers. Specimen 731 (Spelman Collection) was taken on Sept. 1, 1881, at Rye Beach, N. H.; it is a female in full plumage. Specimen 730 (Spelman collection) was taken Aug. 22, 1881; it is a male. The entire lower parts from the bill to the abdomen are black and white, evenly divided. These data will, I think, be sufficient to make plain the point in question.

I have examined, also, about thirty of the younger birds (those in the gray and white plumage) in Mr. Brewster's collection; they are from Maine, Massachusetts, South Carolina, Georgia, Florida, Lower California, and San Francisco, California. Each and all have every appearance (to me) of being young and undeveloped birds. I think the reason we see and capture so many more of the gray and white plumaged birds is because they are younger and less wary than the old birds, which latter, being shy and having been over the route a number of times previously, do not stop or remain at places where they are likely to be harassed. In studying the plumage of the Black-bellied Plover,

as also of the Knot (*Tringa canutus*), a large series of specimens is imperative in order to arrive at satisfactory results, owing to the diversity of their plumage as they advance from youth to age. The Knot, too, is said to assume this gray and white form of plumage similar to that of the young birds, during the winter. I think this statement also is incorrect, but as I intend to present an article on this bird later in the year, I will defer until that time what I wish to say regarding its habits and plumage.

The Black-bellied Plover is in a great degree a *tide* bird, seeking a large portion of its food on those extensive sand flats left by the receding waters, which may be adjacent to marshes where the grass is short, and which are interspersed with barren places where there is no grass, also to uplands and fields where the grass is scanty or closely fed down by sheep or cattle. It is to such places that they like to resort when driven from their feeding grounds on the sand flats by the incoming tide. They also frequent at such times the crest and dry sand of the beaches and shoals; here they remain until the tide has sufficiently ebbed to permit them again to return to feed. Their food consists largely of minute shell-fish and marine insects. They feed also on the larva of one of the cut-worms (Noctuidæ) which they obtain on the marshes; sometimes after being shot on the Dennis marshes, Cape Cod, Massachusetts, they will have some of them still in their throats. They also eat the large whitish maritime grasshopper (*Œdipoda maritima*). When on the flats they usually seek their food near the edge of the water. They also frequent such flats during the night as well as in the daytime. As there is more ground on Cape Cod suitable for this bird's requirements than in the rest of New England there would consequently more of them collect in this locality than elsewhere. In the neighborhood of the islands of Tuckernuck and Muskeget there are also extensive sand flats at low tide, and here also they used to be abundant many years ago. In the neighborhood of these islands, as also on Nantucket, they have been known to remain until the end of November. On Cape Cod their favorite resorts were, on the south side, the Dennis marshes, the sand flats outside Chatham, and the marshes below Great Island, near Hyannis, also Wellfleet on the north side. Here in former years large numbers, as many as a thousand at one time, frequented the Dennis marshes and the flats outside, often mingling and stand-

ing and feeding on the marshes for hours together, with the Knots or Redbreasts (*Tringa canutus*), Turnstones (*Arenaria interpres*), and Red-backed Sandpipers (*Tringa alpina pacifica*). Some of the flocks were composed of these four kinds of birds, it being no very uncommon thing, after discharging the gun at a flock, to gather up some of each, and many an old Black-breast has been inveigled up to the decoys within gunshot by being in company with its less suspicious companions.

While the Knot (*T. canutus*) mingles freely with the Black-bellied Plover here, as elsewhere, those of each kind composing one flock seem to keep a little apart. Often when alighting the Knots will be all on one side just a little distance away by themselves, and the Black-bellied Plovers by themselves.

In the autumn I have occasionally seen a flock composed of American Golden Plover (*C. dominicus*) and Black-bellied Plover. One flock I have in mind was composed of fifteen of each of these birds. They remained together on Nantucket Island for a week or more, feeding on the flats together and then coming to the same field when driven off by the incoming tide. On Nantucket Island some thirty-five or forty years ago the Black-bellied Plover frequented the uplands, there being but little marsh land adapted to them; to such uplands they became much attached. Mingled with them would be Turnstones (*Arenaria interpres*), Ringneck Plover (*Ægialitis semipalmata*), and Peeps, all congregating together on the high ground or plains adjacent to the north shore of this island, such flocks often aggregating several hundred.

On these islands (with one exception hereafter described), as also on Cape Cod, they have been noted year by year in lessened numbers until few are seen now as compared with former years. In looking for the cause of this falling off in numbers I am not wholly in accord with the statement which I have frequently heard expressed, that it is owing to the numbers killed during their migration north and south along this coast. The aggregate number of these birds killed in New England for many years past is not in my judgment sufficient to have been alone the cause of such a perceptible difference. I lean to the view that for a considerable number of years past they have been sufficiently harassed on their arrival and during their sojourn to have caused them to forsake such places, and they pass by, without stopping at those localities

where they formerly have been so incessantly pursued. I am also strongly of the opinion that many of them, having a number of times previously made this same journey, recognize such localities as places to be avoided and consequently pass on. In passing over such former resting places, of late years no responsive note of invitation is heard in answer to passing flocks, for all is silent. I am informed on what I consider reliable authority that about twelve years ago large numbers of the Black-bellied Plover and also of the Knot, or Redbreast (*Tringa canutus*), were noted from the 20th of May to the 1st of June on the Magdalen Islands. When tired at sea they will alight on masses of floating seaweed, and also on the ocean where they sit buoyantly, swimming with ease, experiencing no difficulty in taking wing. I judge they have never been very abundant in America, being probably outnumbered many times by the American Golden Plover (*C. dominicus*) and the Knot (*Tringa canutus*).

It has occurred to me that possibly they may have in part changed their habitat and lines of migration to the Eastern Hemispere although I am not in possession of any facts to substantiate such a theory. It is, however, a fact that fewer of them visit us now than formerly, although during the spring of 1890 quite a remarkable change in the abundance of these birds was noticed in the neighborhood of the island of Tuckernuck, Massachusetts; from a flock of about twenty-five birds which served as the nucleus they continued to increase until six to eight hundred had collected, the average number in the spring for the fifteen years previous being two to three hundred birds. The spring of 1891 showed no such corresponding result, for the number again decreased without any apparent reason to the average of former years. During their stay in the above locality they frequented the upland on the south side of the island, also Smith's Island (a sand spit) and the extensive sand flats bare during low water, following the inside line of the beach when flying, and generally being in pairs or a few together.

On their return from the north the first of the old birds begin to appear about the 25th of July, from which date to the 20th of August is the height of their abundance. The young birds come, a few scattering ones, about the first of September, rarely before, and they often remain until the latter part of November, or until snow flies. The earliest dates on which I have

heard of the Black-bellied Plover appearing in the spring were May 6, 8, and 12. They are most abundant about the 20th of May and for a few days after, according to weather conditions; by the end of the first week in June they have all departed north. In the spring, when migrating north, they seem to appear on warm pleasant days when the wind is fair. Head winds are likely to arrest their flight until favorable conditions again prevail.

From notes taken by a friend near Port Royal, South Carolina, I gather that some birds pass north from the last week in April to the middle of May, when the movement ceases; on their return from the north they are seen at the above place from the middle of August until the end of October going south, but they never have been what might be called numerous at either season, according to his experience.

I have heard of but one instance when these birds have been taken during the winter in New England. Mr. S. Hall Barrett of Malden, Mass., shot three in December, 1872, at Gravel Island, Monomoy, Cape Cod. They were all black-breasted birds with whitish heads. It was thought at the time that they were spending the winter in this locality, as they had been seen a number of times previous to their being killed. This gentleman has also shot the Red-backed Sandpiper (*Tringa alpina pacifica*) in March in New England.

In migrating south in the autumn the Black-bellied Plovers pass inland through New England to a greater or less extent. I have in mind an instance when I shot nine about the end of October, 1865, at Missisquoi Bay, Lake Champlain, in northern Vermont, near the boundary line of Canada. The weather was cold, and there was a fall of snow during the first week in November. I also saw others. The water in the lake at this time was quite low and there were considerable sandy margins and points exposed suitable for the birds' requirements. I learned, on inquiry, that, when this low stage of water prevailed in the lake, many of the water birds were not uncommon visitants at this season. At the same time that I shot the nine Black-bellied Plover above mentioned I also obtained Willets (*Symphemia semipalmata*), Greater Yellowlegs (*Totanus melanoleucus*), and Peeps.

The Black-bellied Plover fly lower on migration, I think, than do the American Golden Plover, and the flocks string out more, a customary mode of flight being in lines; they also fly like Ducks and Geese at such times. They are apt to fly in lines also when coming from the sand flats to and over the marshes.

I have noticed in the autumn that the young birds generally appear in pairs or singly. I never have observed more than a few together, and they are seemingly rather solitary at this season. They also show a preference for the sandy shores and margins of ponds near the ocean, often frequenting the crest of the beach. As a rule they like to be where the sand is wet. They roost on the dry crest of the beaches and on shoals.

When on the ground they usually run very fast for four or five yards, then stop, elevate the head, and look around. They strike at the object they are going to pick up and eat with a very quick motion. In the spring when passing from their feeding grounds on the sand flats and over the marshes they fly low and swiftly, apparently always on the alert, often turning on their sides so as to show the whole of the breast. It is customary for them to approach the marshes from the leeward side. It is not an uncommon occurrence for them to remain on the marshes during low water, instead of going to the flats, which indicates that they obtain considerable of their food in such places.

They make two notes, one a call which is very clear and far-reaching, of several notes with the accent on the second one, and plaintive and mellow; the other is low, and is uttered when they feel easy and contented. It is customary for them to remain silent when a number are standing together. They will not always respond to the call-whistle of the sportsman, or come to the decoys, even if he be well concealed; and even when leading up to the decoys, they do not come in closely flying flocks, but are much scattered and strung out in line, so that while some may be near enough to shoot, there will be others out of range. The reason is the older birds are more wary and suspicious, the adults, as far as my experience shows, being invariably shy. One must lie close and have all the immediate surroundings perfectly natural about the place of concealment in order to get them up to the decoys; and after many unsuccessful attempts to capture them one becomes imbued with the fact that the old birds

are well calculated, under ordinary circumstances, to avoid danger; they succumb only to those sportsmen who have served a long apprenticeship, and who have acquired a knowledge of their habits.

There is something very aristocratic in the bearing of the adult birds as you watch them standing on the marsh with their heads erect, their black and white plumage strikingly defined, and their large, dark, liquid eyes ever on the alert for danger. With the yellowish green marsh grass for a background, they make a most interesting study in black and white, which, coupled with that clear, penetrating note of alarm when danger is discovered, cannot fail to impress one. I have known the old birds in the spring fairly to scream with terror on suddenly perceiving my close proximity as I arose from my sunken hogshead to shoot at them.

To my old friend Mr. Augustus Denton I am indebted for a considerable share of the following notes, given me in 1877, which are for Cape Cod, Massachusetts, unless otherwise stated. I consider them especially serviceable in giving a very good idea of the spring migration of the Black-bellied Plover northward, as well as indicating their great regularity of movement.

1842, May 24, 25. — A great many birds having collected on Tuckernuck Island, Mass., three men shot one hundred and twenty on the former, and one hundred and fifty on the latter, date. These were noted records even in those days.

1843. — A great many birds on Tuckernuck Island in the spring; a great many were killed.

1858, May 28. — First birds shot.

1858, June 8. — Last birds shot. Aug. 6, shot a few birds.

1859 and 1860. — Practically the same as 1858 without August date.

1861, May 27. — First birds shot. None killed in June. Shot five between Oct. 1 and 27 at Marblehead Neck, Mass.

1862. — Very few birds.

1863, May 25. — First birds shot; good shooting until June 6.

1864, May 28. — First birds shot; good shooting until June 8. A few birds killed in August.

1865, May 26. — First birds shot; abundant until June 5. A fair amount of birds in August; shot 30 at Wellfleet, Cape Cod.

1866. — Only a few scattering birds this spring. Shot one Sept. 29 at Rockport, Mass.

1867, May 27. — First birds shot; most numerous between the 29th and 31st; good shooting until June 7.

1868, May 23. — First birds shot; numerous from the 27th to 30th, lasting until June 6.

1869, May 27. — First birds shot; birds very scarce. A few birds in August.

1870. — Law prohibiting spring shooting.

1871, May 17. — First birds shot, the earliest date I have ever shot these birds; abundant until June 5. Law prohibiting spring shooting repealed. Quite a number of birds in August.

1872, May 25. — First birds shot; continuous good shooting until June 8.

1873, May 19. — First birds shot; most numerous on 31st; last birds shot June 7.

1874, May 17. — First birds shot; best shooting May 29; no birds in June.

1875, May 14. — First birds shot; best shooting on 29th; last birds shot June 5. Sept. 24 shot six on Muskeget Island. Oct. 1, shot 24 young birds. Last bird killed on Cape Cod Oct. 20. Nov. 5, shot one on Nantucket Island.

1876, May 20. — First birds shot; best shooting on the 26th. Very few birds in June. From Oct. 5 to 21 shot a good many young birds.

1877, May 20. — First birds shot; best shooting May 28; birds about all gone June 1. Aug. 25 shot one bird on Nantucket Island; Sept. 26, shot three, Nantucket Island.

1878, Oct. 14. —Shot one, Nantucket.

1879, Aug. 28. — Shot six on Nantucket Island.

1880, Sept. 11.—Shot one, Nantucket.

1881, Aug. 11. — Saw seven, Nantucket.

1882, September 21. — Shot one, Nantucket; Sept. 27, shot one.

1884, Aug. 25.—Shot six, Nantucket.

1886, Sept. 1 and 5. — Shot one on each date, Nantucket.

1888, Aug. 19. — Shot one, Nantucket.

1889, Sept. 22. — Shot one, Nantucket.

1890, May. — More birds than for many years, in neighborhood of Tuckernuck Island. June 3, saw a flock of eighteen on Nantucket Island.

1891, May 27.—Shot four old birds on Nantucket; heard of several flocks seen. July 18, one bird seen, Essex, Mass., flying from the east. Aug. 16, saw four; shot one whose breast was nearly all black. Sept. 12, saw two birds; Sept. 13, saw one, Nantucket. Sept. 26, saw two young birds, Nantucket. Sept. 29, saw one young bird, Nantucket.

OUR SCOTERS.

BY G. TRUMBULL.

HAVING devoted a good deal of time to the study of these birds, I venture to call attention to numerous errors which have appeared, and to certain facts which have not appeared, concerning them. It is my intention, however, to devote the present article more particularly to the American Scoter, and to follow it at a later date with additional notes concerning the White-winged and Surf Scoters. The colors (in a marked degree transitory after death) of the bills, eyes, and feet, I have noted in each case within a very few minutes after the bird was shot.

It seems strange we should so long have neglected to familiarize ourselves more fully with the colors and certain other characteristics of these widely distributed and easily secured species. They present such exceptionally favorable opportunities for study, particularly along our sea coast, where in spring and fall men and boys slaughter them by hundreds and cripple them by thousands. They are also reached without much difficulty during the winter months, and a few, as is well known, tarry with us throughout the summer.*

AMERICAN SCOTER (**Oidemia americana**).

Though the inaccuracies of former descriptions, to which I would here point, are but indirectly connected with the plumage, perhaps I had better describe, with the exception of the well-known dress of the adult male, *all* the variations in this bird's appearance which I have myself noted. Indeed I do not see how I can well emphasize facts which should be emphasized, without being thus tiresome.

I have failed to witness most of the phases through which the male's bill passes while developing from the form of the female's into the swollen dimensions and brilliant coloring of the old

* Some of those which remain are probably of the superannuated and sterile class, but very many of them are convalescent or recovered survivors of the last shooting season, pensioners, as the gunners call them, which at the time of the vernal migration were in too crippled a condition to fly with their fellows.

drake's, and I am unfamiliar with other intermediate aspects between chickenhood and maturity. It is therefore among the possibilities that during some of these intermediate variations certain tints very different from those I have observed may be developed and retained for a time. Yet, after examining a large number of specimens in both spring and fall, I cannot believe that any of the statements which I quote from others as erroneous concerning this species (and *deglandi* and *perspicillata*) will ever be proved to be other than practically erroneous by any amount of additional material.

*Adult male.** — Bill, in front of nostrils and narrowly along the sides, pure black; the remainder, which includes the bulging part or hump, light lemon or canary yellow, richly dyed at the sides with scarlet vermilion, deeply at and near the nostrils, and lightly (the reddish glow becoming lighter and more yellowish) toward the base; this bright coloration meeting the black of both bill and plumage abruptly. Though the red color at the sides of the bill is never continued farther forward than the nostrils, the yellow — between the nostrils — is sometimes extended beyond them for an eighth of an inch, and in such specimens the black along the sides or edge of the bill is narrower. All the drakes that I have examined whose bills are thus more broadly brilliant are to some extent larger than the others, and represent, I imagine, the very highest degree of maturity. Again, in some of those specimens which I regard as less thoroughly developed, the yellow does not quite fill the space between the nostrils, but leaves at each side — at the edge of each nostril — a narrow line of black. Eyes deep brown. Feet dark brown shaded with black; webs black. It may be stated here once for all that the eyes of the males, old and young, as well as those of the females, are deep brown — the species differing in this respect from *deglandi* and *perspicillata*.

Adult female in spring.† — Plumage practically brown all over, but this color blackening here and there, particularly upon the upper parts, and paling to buff and sometimes, very narrowly, to a still lighter tint at the edges or ends of the feathers; the lower surface of the body a trifle lighter than the upper, and a trifle more grayish; the sides of the head below the eye, and the throat, continuously gray, or dull white faintly and minutely flecked with dusky brown; this gray part (referred to hereafter simply as the light part of the head) meeting rather abruptly the dark brown which extends over the upper part of the head and along the nape. Bill black or blackish, irregularly *marked with yellow*, this color often beginning on the culmen between, or a trifle in front of, the nostrils, and continuing patchily toward the base in two diverging streaks; in other specimens the yellow is almost or wholly confined to the sides of the bill, and runs back-

*Described from specimens killed April 18 and 19.

†Described from specimens killed April 12.

ward in a scratchy fashion from the nostrils. I have found this yellow marking — though varying greatly in extent and continuity — on the bills of all the females of this plumage which I have examined. I was inclined to believe these birds young males — the bill of the female having been always described as uniformly black or blackish — until they were opened and their sex was determined. Feet warm olive brown with blackish shading, or, to be more exact, olive brown shaded with black on the inner side (or side of tarsus and toes next the other foot), and almost solidly black on the outer side; webs also black.

*Young female in autumn.** — Light part of head considerably lighter, contrasting very strongly with the deep brown above, the throat almost evenly pale buff or dull whitish; the lower plumage considerably lighter than the upper parts and more gray, the lower surface of the body very pale, approaching whitish, and faintly spotted with the brown or grayish brown of the fore breast and posterior region. Feet as before; bill grayish black.

*Young male in autumn.** — Like young female just described, but somewhat more whitish and more spotty below; the bill showing no indication of its future hump.

Young female in spring. — Younger at least than the more uniformly brownish females to which the term 'adult' is attached, and more mature than those described under the heading 'Young female in autumn.' Lower surface of body with a great deal of white, and more boldly spotted, with deeper and less grayish brown than the younger (male and female) birds of autumn. Light part of head as in adult female. Bill uniformly blackish, or generally so, sometimes showing a very little of the older bird's yellow. I have noted the presence of this yellow on but two of these young females, and in each case it was as a hardly noticeable spot or speck above the nostrils. With these exceptions there was but little variation among a large number shot April 12.

The basal portion of the adult male's bill has been described as "orange," "entirely orange," "orange yellow," "bright orange (yellowish in the dried skin)," "yellow or orange," etc. It is not surprising that the term 'orange' should have been employed, as some of the color on the side of the hump is somewhat like the color of some oranges; but the most conspicuous part of the reddish color is too pure, too decided a red, to be so termed, and the chief, most noticeable color of the bill (the light yellow part) has not the least suggestion in it of an orange tint. So if we permit the term 'orange' (for this reddish color) to pass unchallenged, the bill is still yellow rather than orange, and most surely it is not "entirely orange," neither is it "orange yellow" nor "yellow

*Described from early October specimens.

or orange," but yellow *and* orange. It may be added that the reddish color becomes more orangey (and the light yellow above somewhat less pure) within a little time after the bird has been killed. I have myself used the term 'orange' for the red of this bill in a description which was written when none but stale specimens, or those which had been killed two or three days, were at hand.

One author describes "the swollen basal portion" as "red to beyond the nostrils," but as he makes no mention of the yellow, and as the red never does extend beyond the nostrils, his description cannot be regarded as happy.

Another says: "The male is noted for the gibbosity of pinkish-white near base of bill; the lower edge of the swelling is deep red, gradually blending with the black of the bill." There is no pinkish white on the bill, nor any "blending" — gradual or otherwise — of the red and black.

Another describes the feet as "greenish" simply, but there is not the least greenish or olive cast about the feet of the adult drake, and the feet of the female and young male are as brownish and blackish as they are greenish.

Audubon's account of the drake's beak, though better than others, is nevertheless unsatisfactory, for it gives the color of the "bulging part" as "bright orange, paler above," leaving the reader to suppose that the upper part though "paler" is also of an orange tint; and though in his original folio edition there is a show of pure yellow, the orange color is carried too far forward, appearing in front of the nostrils, where the bill is always black, and between the nostrils, where it is always pure yellow. In some of the octavo issues of Audubon (those of 1840-44 and 1871 at least) the plumage is much too highly glossed with blue or blue and purple. The upper parts of the adult drake are, to be sure, somewhat glossy, and the head, with a little of the neck, shows in certain lights a plum-colored iridescence, but in no case is this iridescence very noticeable.

Among the colored illustrations of two of our later ornithological works, the eye of the drake in one case is yellow, instead of deep brown as nature paints it, and in the other white, as in the adult drakes of *deglandi* and *perspicillata*.

Wilson's picture and description published in 1814 (before our American Scoter was separated from the European) were the

beginning of much of our confusion. In 'Fauna Boreali-Americana,' 1831, our bird is fully recognized as a distinct species, but Wilson's plate (which was certainly not colored from any specimen found in our country) is referred to as follows: "It is clear from an inspection of Wilson's plate, that the true *O. nigra* is also found in America, since the coloring he has given to the bill perfectly accords with the English specimens in the British Museum." This was a most natural conclusion, and when in 1834 Nuttall's 'Water Birds' appeared, it included both species as occurring along our coast, i. e. "Scoter Duck" (*nigra*) and "American Scoter Duck" (*americana*).

WHITE-WINGED SCOTER (O. deglandi) AND SURF SCOTER (O. perspicillata).

I place what I have to say about these two species — or about their descriptions — under a common headline for convenience in presenting some of my more fragmentary notes.

In Wilson's work, Vol. VIII, 1814, the male of *deglandi* (believed by all at that time to be identical with the European variety *O. fusca*) is represented as having the upper mandible black at base, "the rest red." Its bill has been referred to in our own half of the century also, as "black at base and lateral edges; red elsewhere." The writer of this last description probably got the idea of so uniform a red from Wilson, but where on earth did Wilson get it? Surely not from nature. Another writer has lately described *deglandi* in a fashion as original. He says: "Knob on bill black, rest of bill and legs orange." It will be observed that though this later author has chosen a less sanguinary hue than his predecessors, he has carried it considerably farther, continuing it over the legs as well as beak.*

*The colors of the bill and feet (of adult male *d'eglandi*) are in reality as follows:—

Upper mandible: immediately at base black, this black spreading forward over the elevated portion or knob and continued along the edges of the mandible, sometimes as far as the nail, and sometimes disappearing brokenly before reaching it; sides purplish red, or wine-purple, changing to orange next to the basal black; nail orange, but of a somewhat deeper tint; from nail to knob white; the middle of the bill, in other words, being broadly white from the nail to the black between the nostrils.

Lower mandible: with patch of orange (including nail) at end; back of the orange, white, this white meeting irregularly with basal black which is extended in a somewhat varying degree toward the gonys.

Feet: side of tarsus and toes, excepting inner toe, dull purplish pink or light wine-purple; the inner side (or side next to the other foot), with both sides of the inner toe, orange-vermilion; joints and other portions splashed with black; webs solidly black,

Another bit of Wilson's fallibility may be referred to in this connection. In his article on our White-wing (*deglandi*) which immediately follows his account of our Black Scoter (*americana*) he says: "This and the preceding are frequently confounded together as one and the same by our gunners on the seacoast. The former, however, differs in being of greater size; in having a broad band of white across the wing," etc. A clerical error, to be sure, but how indicative of the inexplicable tendency to misrepresent and confound our 'Coots.' I am wondering if in this very article I have myself made some such clerical or more blamable blunder. If I have, I shall most certainly be in good company, and shall have added new interest to an already amusing list.

Audubon describes the eyes of our White-wing as follows: male "bright yellow" (they are white); female "as in the male but of duller tint" (they are deep brown); and of the eyes of *perspicillata* (which are as in *deglandi*) he says: male "bright yellow-white"; female "as in the male." To be sure Audubon also wrote before *deglandi* was pronounced different from *fusca*, and he may have taken his colors from pictures or descriptions of European birds. I will not attempt, however, to say whether his colors are or are not like those of *fusca*. I have examined no European White-wings (fresh specimens I mean) and dare not trust the testimony of others concerning them; too many errors are being perpetuated by such copying. Scientists on the other side of the water may have failed to note the colors of life, and may have misrepresented their Scoters unwittingly, as we have misrepresented ours.

We all remember how Herbert (Frank Forester) mistook *deglandi* for a nondescript, and that some of the scientists were slow to recognize his mistake. I wonder if any one has ever observed that he (Herbert) was also unfortunate in using in his 'Field Sports' the specific character of *perspicillata* for *americana*. He quotes from Giraud's 'Birds of Long Island,' but unhappily copied from the wrong side of the leaf, — page 329 instead of 330.

While thus retrospective (and captiously inclined?) I very naturally recall that specimen of *deglandi* taken in Alaska, which for a time was referred to *fusca*, and that other distinction without a difference, the supposed variety of *perspicillata* — i.e., *trowbridgii*.

I have already referred to a work in which *americana* is represented with white eyes. The same work contains other evidence of carelessness. The writer informs us that *deglandi* is sometimes "found in company with the Velvet Scoter," a fact hardly worth publishing, as the Velvet Scoter (he is describing our own avifauna) and *deglandi* are one. He also tells us in his account of *perspicillata* that "it was common in summer to see males in the *bimaculata* plumage," but as this term *bimaculata* (the specific name given by Herbert to his supposed nondescript) can only be applied with any technical significance to the plumage of *deglandi*, we are left somewhat in doubt as to his meaning.

In another volume of late date we find the colors of the *perspicillata* male described as follows: "Bill mostly orange red, with a patch of black near the base of the upper mandible, bordered by orange and pale blue; lower mandible pinkish; legs and toes orange, webs dull green."* Perhaps I had better leave the reader to make his comparisons with my foot-note uninterruptedly, but I will add this much: I have examined most carefully numerous specimens in spring, autumn, and winter. I have never seen the least touch of blue on any of the bills (the nearest approach to it being the inconspicuous lavender tint at the root of the nail), neither have I found the least greenish cast on the webs, but the

*The colors referred to (of adult male *perspicillata*) are as follows:

Upper mandible: above at base, including nostrils, dull crimson (or pinkish-purplish crimson), this changed to flame-scarlet over the front of the mandible; nail cadmium-yellow, narrowly edged anteriorly with lighter yellow, and sometimes posteriorly with light lavender; side of mandible with large squarish patch of black at base, this separated from the black feathering above it by orange and from the feathering behind by a narrower edging of crimson; beneath this black patch, and in front of it as far as anterior edge of nostril, or thereabouts, continuously white, the remainder of the side (anterior to white portion), pure orange.

Lower mandible: nail like its fellow above; back of this for a short distance reddish flesh-color terminating irregularly in white, the white continued to the base, with more or less black on the naked skin between the rami.

Feet: outer side of tarsus and toes, excepting inner toe, crimson; the inner side (or side next the other foot) with both sides of the inner toe, orange-chrome deepened in part to orange-vermilion—a little of this color sometimes showing on the outer side of the middle toe; joints and other portions blotchily marked with black; webs solidly black.

Decidedly the most truthfully colored representation of this drake's bill which I have seen is that of Nelson in his 'Report upon Natural History Collections made in Alaska,' plate V. Whatever the faults in the picture, we can readily believe that it was colored, as he says, "from nature."

very conspicuous white of the upper mandible, which he does not even hint at, is discernible a gun-shot away.

I might also point to a modern work in which the bill of the *deglandi* female is painted blue; that of female *perspicillata*, sea-green; the eyes of both, yellow; and where in the text the eyes of the *deglandi* female are still "yellow," and those of female *perspicillata* "yellowish-white." How much prettier and more appropriate for the sex, this blue, green, and yellowish, than the dusky hues used by nature.

It is a pity, perhaps, ever to call attention in print to these mistakes, for if in some far off future the theory of evolution is as fascinating as it is today, what interesting changes might be shown among the Scoters.

HYBRIDISM, AND A DESCRIPTION OF A HYBRID BETWEEN *ANAS BOSCHAS* AND *ANAS AMERICANA*.

BY D. G. ELLIOT.

THE OCCURRENCE of hybridism among birds in a state of nature in certain groups is not infrequent, but it is generally believed that the individual hybrids are infertile, if not in the first certainly in the second generation. If this were not so, the evidences of the existence of these crosses would be exhibited in specimens killed, more often than has been the case up to the present time. Of course it will be readily understood that the probability of the continuance of the peculiarities shown by these hybrids under the most favorable circumstances, and allowing that they were fertile beyond the second generation, is not great, for they would be extinguished by interbreeding with pure-blooded birds in a comparatively brief period of time; otherwise in those families whose members migrate on the same lines of travel, and associate more or less together, there would exist the possibility of a mongrel race supplanting a pure species, and our scientific classification would be thrown into considerable

confusion thereby. By many persons, who have not appreciated the fact of this existence of hybridism, crosses arising from the interbreeding of distinct species have been described from time to time as new species, although to those more familiar with the subject the evidence of their descent, shown in their style of coloration, and often in the outline and structure of the bill, is manifested almost at a glance.

Among ornithologists, as a rule, there seems to have existed a strange reluctance to acknowledge this condition of hybridism, the reason for which would be very difficult to explain, save where in some instances it might conflict with preconceived opinions or theories entertained by various authors. One of the most, if not *the* most, remarkable conditions of hybridism known to us, is that produced by the crossing of *Colaptes cafer* and *C. auratus*, the offspring of which has been known in our literature as *C. hybridus*, and the evidence of which has been witnessed over a vast extent of North America; but even in this case it has not been ascertained that the hybrids have been fertile to any very great degree, although the information gathered would seem to foretell the gradual curtailment of the range of *C. cafer* as the dominant form, *C. auratus*, intrudes itself farther and farther upon its domain.

Perhaps the most numerous examples of intercrossing have been obtained from the families of the Phasianidæ and Anatidæ, and species of both of these are known to interbreed more or less readily under the conditions pertaining to domestication. But even under such circumstances, when the physical conditions of the birds have attained a most perfect development, and their passions have been excited by stimulating food to the highest degree, fertility rarely extends beyond the second generation among the hybrids breeding *inter se*. Prof. Newton (P. Z. S. 1860, p. 338) instances a case that came under his own observation, where a pair of hybrids, the result of a cross between *Anas boschas* and *Dafila acuta*, interbred, as he believed, near a pond in his park, and produced four young, two males and two females. During the next breeding season these birds were closely watched. His observations led him to regard them as infertile, and his belief was shown to be well founded, when he dissected them after death, proving that in this case ability to reproduce their kind did not extend to the second generation.

Among the species, so-called, described from hybrids I may mention *Fuligula ferinoides* Bartlett (P. Z. S. 1847, p. 48) and *F. homeyeri* Bädeker (Naumannia, 1851, pp. 12–15). These were afterwards shown to be hybrids between *Fuligula ferina* and *F. nyroca*. An analogous example is now before me of a cross between *Aythya valisneria* and *Aythya collaris*. I exhibited this specimen with others at a meeting of the Zoölogical Society of London, and a poor figure is given of it in the P. Z. S. 1860, pl. clxvii. It is there erroneously called a cross between *A. americana* and *A. collaris*. Its great length of bill and extent and depth of coloring of the neck show the Canvasback derivation and not the Redhead. *Anas breweri* (Audubon, B. of Am. Vol. VI, p. 252) is, again, an instance of crossing between *A. boschas* and *A. strepera*, and interbreeding has occurred so frequently in this family that M. de Sélys-Longchamps in 1856 (Bull. Acad. Roy. de Bruxelles, Tom. XXIII, No. 7) was able to record no less than forty-four different crosses among its members.

In the Phasianidæ, as in other families of gallinaceous birds, hybridism is often met with, and especially among certain of its species. Thus *Euplocamus lineatus*, found in Tenasserim, Pegu, and Siam, interbreeds with *E. horsfieldi*, a resident of Assam and neighboring provinces, and the two species pass completely one into the other in the province of Arakan. In like manner *E. albocristatus*, ranging in the northwest Himalayas as far as Nepaul, interbreeds in the last province with *E. melanonotus*, which is found in Sikkim and Butan. In the domestic and semi-domestic state, as observed in England, the offspring of two or three introduced species are fertile, but these are mongrel races, not strictly hybrids, and are perpetuated by the infusion of fresh blood.

When speaking of hybrids, this term is meant to define those individuals which are the direct offspring of two distinct species, each possessing in equal degree the blood of both parents. It is such creatures, which may be termed *complete hybrids*, that it is believed are not fertile beyond the second generation. But it is not yet, I believe, conclusively proved that such a complete hybrid may not be fertile when mated with a pure-blooded bird of one or the other of the species from which it descended, and their progeny, being three quarters pure

blood, may also be fertile; and these incomplete hybrids may thus transmit the characters of the separate stocks to which they owe their existence, through numerous generations, and spread over a wide extent of country, but it is the constant infusion of fresh blood that makes this fact possible, and not the ability of complete hybrids to produce offspring indefinitely, breeding *inter se*. Without the accession of pure blood constantly introduced into the hybrid stock, there appears to be no recorded evidence of the continued fertility of complete hybrids. Under this hypothesis an explanation is obtained of the occurrence of *Colaptes hybridus*, already mentioned, over an extent of country about one thousand miles in length with a varying width of from three to five hundred miles. (See Allen, Bull. Amer. Mus. Nat. Hist. IV, pp. 29–33.) The two species dwelling on either side of this tract encroach probably upon it to a certain degree, breeding with the incomplete hybrids within the borders, thus introducing a constant stream of fresh blood, and these incomplete hybrids breeding again, if even only through their first generation, would easily produce the almost limitless diversity of characters pertaining originally to the pure-blooded *C. auratus* and *C. cafer* which are met with throughout the district in which these crosses are mainly dispersed.

It has been urged as a proof of the unlimited fertility of hybrids, at all events among mammals, that the wild bison (*Bison americanus*) can be crossed with domestic cattle, and that their progeny is fertile. This, however, cannot be considered a proper criterion for the reason that domestic cattle are artificial breeds that either have never been wild, or, if the present generations of any of them can be traced back to a wild ancestor, it is only through such a lapse of time that their descendants are practically, if not completely, domesticated animals, and therefore through artificial selection have acquired the power of fertility. Their offspring are mongrels, *i. e.* offspring of varieties, not hybrids, which are offspring of species. The influences of domestication have dominated and superseded those pertaining to the animals in a state of nature, and it is hazardous to argue that, because wild animals crossed with those in captivity can produce offspring that are fertile and which transmit their power of fertility to their descendants indefinitely, two wild animals in a state of nature would be able

to accomplish similar results in their offspring. It is, of course, next to impossible to prove this fact among wild animals, but the fact that a strain of hybrids occupying a district to the exclusion of their parent stock, save in one or two very exceptional instances, has not been observed in a state of nature, would seem to be the best possible proof that a cause does exist which prevents complete hybrids from continuing to exist, and that they either die out from inability to reproduce, or else are swallowed up and extinguished through the interbreeding of incomplete hybrids and pure-blooded races, the influences exerted by the latter proving too powerful for the mixed races to overcome. In this fact lies the possibility, and the only one where two pure-blooded races are liable to cross, of the continuity of distinct species.

In this connection it may be suggested by some believer in complete hybrid fertility, that these individuals are the progenitors of new species, evolving new characters out of the mixed ones derived from their original sources. I do not think that there is any recorded evidence permitting the belief that such a view is anywise tenable.

Sterility in hybrids is caused by the disturbance in the reproductive organs arising from the union of two distinct forms, thus rendering them inoperative; or the continuance of the race is prevented by the early death of the embryo. (See Darwin, Origin of Species, 3d ed. p. 286.)

The principle of reversion also acts as a check to the continuation of hybrid and mongrel strains. Thus domesticated pigeons constantly show a tendency to revert to their parent stock, *Columba livia*, and fowls in the same way, to their original source, *Gallus ferrugineus*. Darwin relates an instance ('Animals and Plants under Domestication', 1868, Vol. I, p. 242) where he crossed a black Spanish cock with a white silk hen, and one of the progeny, a cock, closely resembled the wild *G. ferrugineus*. This was the more extraordinary as the black Spanish has been long known to breed true, and the silk hen, being of most ancient extraction, having been known previous to the year 1600, also breeds true. If left entirely to themselves, without the possibility of receiving any fresh blood, it is presumable that in course of time these hybrid and mongrel strains would breed back to their original stock, by means of this inherited tendency to reversion.

Comparatively few hybrids among the wild ducks of North America have been observed, and of those met with the majority have had either *Anas boschas* or *Anas obscura* for one of their parents, which would seem to show that the infidelity of these birds is the chief cause for the appearance of crosses. Beside the examples already cited, hybrids have been obtained from the interbreeding of the Muscovy (*Cairina moschata*) and the Black Duck, producing offspring of enormous size, which have been called *Anas maxima*, and the Mallard and Black Duck also cross in the wild state. It may not be surprising that salacious creatures like Ducks should cross when the species are in the habit of associating commonly together and have similar habits; but it is surprising to find hybrids of species whose habits are different, and which, as a rule, keep apart. Therefore I was not prepared to meet with a cross between a Mallard and an American Widgeon, which was killed out of a small bunch of Mallards on the grounds of the Narrow's Island Club in Currituck Sound, North Carolina, in January, 1892. The only other instances that I know of the interbreeding of Mallard and Widgeon is that recorded by Prof. Newton (P. Z. S. 1861, p. 392), but this was between the European birds in captivity, a male *Anas penelope* having mated with a female which was a cross between *Anas boschas* and an ordinary farmyard duck, or a mongrel. I do not recall, however, any other instances when a cross between Mallard and Widgeon has been obtained in the wild state. This bird in question is about the size of an ordinary drake Mallard, and is a male. The first point about it that arrests attention is the bill, which is similar in shape to that of the Widgeon, but about one fourth larger, and light blue in color, with a black nail on the point of the maxilla. The head and neck are brilliant emerald-green like the Mallard, with white dots on the lores and fore part of the cheeks, and a conspicuous buffy white line, the feathers tipped with black, broadest in its upper portion, and running from the ears down the neck. Front, and a line on top of head, blackish, with rusty tips to the feathers on top of the head. Mantle and wings crossed with fine irregular lines of black and buff, this last hue becoming pale buff on the apical half of the tertiaries. Greater, median, and lesser coverts, pale brownish gray, with a narrow white bar, succeeded by a narrow black one on the tips of the last row of the greater coverts. Secondaries

pale gray, with half of the outer web black edged with white. A brilliant, metallic, emerald-green speculum. Two innermost secondaries silvery gray without any black. Primaries blackish brown with rufous shafts save at their tips which are blackish brown like the webs. The inner webs along the shafts are silvery gray. Back and rump brownish-black, finely vermiculated with buff; on the rump a few black blotches, and feathers of lower part, extending over the tail, irregularly crossed with black and white.

Breast dark chestnut with numerous black spots in the centre forming a narrow line from base of the neck, and widening out in a fan shape towards the lower part of breast, where the chestnut color changes to a purplish shade and graduates into the buffy white of the lower parts. Feathers of flanks crossed irregularly with narrow black and white lines. Abdomen and vent whitish, indistinctly barred with fine blackish brown lines, and faintly blotched with buff. On each side of rump a conspicuous, large, white patch, some of the feathers faintly barred with black. Tail: median feathers velvety black, sharply graduated and extending beyond the other feathers about an inch. Lateral feathers grayish brown edged with white on outer webs and tips. Upper tail-coverts velvety black, edged on inner webs with buff. Under tail-coverts velvety black. Legs and feet dark yellow.

On comparing this hybrid with the parent species, the following resemblances are observed. It approaches the Widgeon in the shape and color of its bill, in the buff markings on the side of the head, in the vermiculation of the upper parts, and color of back and rump; also in the coloring of the secondaries, in the purplish hue of the lower breast, in the upper tail-coverts with their peculiar buff edging on the inner webs, and in the shape of the pointed, lengthened tail. It resembles the Mallard in the green head and neck, in the chestnut of the breast, in the slight tendency to curl of the tips of the median feathers, and in its large size. It resembles neither species in the coloration of the wing-coverts, the speculum, the flank feathers, the under part of the body, and the legs and feet.

The specimen is in the collection of the American Museum of Natural History, New York City.

DESCRIPTION OF A NEW TURKEY.

BY GEORGE B. SENNETT.

In 1879, in the 'Bulletin of the United States Geological Survey', Vol. V, No. 3, p. 428, I called attention to the probable distinctness of the Turkey found on the lower Rio Grande in Texas, but hesitated to characterize it for lack of specimens. Since that time I have obtained a fair series of both sexes which convinces me that the bird of this region represents a well-marked subspecies. I propose to call it

Meleagris gallopavo ellioti.

Rio Grande Turkey.

Similar in coloration to *M. gallopavo* in its neck, mantle, upper wing-coverts and breast, but differing in having the back and rump jet black; in certain lights all the feathers show a subapical silvery gray bar of about half an inch in width, with slight rosy reflections, and a narrow line of the same hue on the extreme tip. Feathers of lower back extending over the tail also black with a metallic coppery bronze subapical bar, and broadly tipped with dark ochraceous buff. Upper tail-coverts, save the lower series, chestnut with irregular narrow black cross lines, succeeded by a broad black bar, widest in its central portion, with metallic coppery bronze reflections, and broadly tipped with dark ochraceous buff. The lowest series of upper tail-coverts is also deep chestnut, irregularly crossed with black and tipped with ochraceous buff and without a vestige of the subapical black bar so conspicuous in the other feathers. Tail mottled with pale chestnut and black, taking the form of irregular bars on the lateral feathers, with a subapical black band, and tipped with ochraceous buff. Under tail-coverts black, with metallic green, bronze, and red reflections, and broadly tipped with dark ochraceous buff.

The young male resembles the adult, except in having breast and under parts, flanks, back, and rump, conspicuously tipped with ochraceous buff.

The adult female is black with the iridescent hues seen in the male on back, wings, and under surface. All the feathers of the upper surface have black subapical bars, and the tips grayish, becoming broader on the lower back and rump, while the feathers of the under surface have pale buff tips. The tips of the upper tail-coverts are ochraceous, but paler than in the male, while the under tail-coverts closely resemble those of the male. The tail also resembles that of the male, but with paler tips.

Types: adult ♂, No. 569, my collection, Lomita Ranch, Hidalgo Co., Texas, April 13, 1878; adult ♀, No. 5533, my collection, Cameron Co., Texas, March. 6, 1888.

The range or habitat of this race, so far as known at the present time, is restricted to the lowlands of eastern Mexico and southern Texas. It will probably not be found south of Vera Cruz, nor is it likely to be met with to the north beyond the Brazos River of Texas, its range being thus restricted within about ten degrees of latitude. Wherever timber and food are in abundance we find this new form common to the coast and lowlands, and we could not expect to find it at an altitude exceeding 2000 feet above sea-level; while the variety *mexicana* is found only at the higher altitudes from 3000 to 10,000 feet above the sea.

So far as the wild state of the country embraced in the habitat of *M. g. ellioti* allows us to judge, there is no sign of its intergrading with any other form. All the specimens that have come under my observation are remarkably alike, and when compared with the other races show a decidedly marked contrast.

The material on which I base my description is as follows: — Three fine adult males: first, the type taken at Lomita Ranch on the Rio Grande, by myself, on April 13, 1878; second, one taken by my collector, John M. Priour, at Victoria in the State of Tamaulipas, Mexico, April 22, 1888; and third, one taken by F. M. Chapman on the Nueces River, not far from Corpus Christi, Texas, in the latter part of April, 1891. Also two young males taken by my collector, M. A. Frazar, at Lomita Ranch, Hidalgo Co., Texas, Jan. 16, 1881; two adult females, and parts of a dozen other birds which, taken together, show the characters of the race.

In comparing with the other forms, I have access to the figure of the *type* of *Meleagris mexicana* Gould, in Elliot's 'Birds of North America', Vol. II, pl. 38, exhibiting the bird half its natural size; also to two fine adult females of *M. g. mexicana* in the American Museum of Natural History, New York, which were collected by Dr. Mearns in the high altitudes of Arizona; and of the eastern form several truly typical specimens which are in the mounted collection of the American Museum.

M. g. ellioti can be distinguished from the other forms by its dark buff edgings on tail and upper and lower tail-coverts, in

contrast with the white color on the same parts of *mexicana*, and the deep, dark, reddish chestnut of the same parts in *M. gallopavo*, the eastern United States bird. The lower back is a deep blue black and is wanting in those brilliant metallic tints so prevalent in the eastern bird and in the type of *mexicana*. The primaries of the wing are black with white bars in contrast with *M. gallopavo* the primaries of which are white with black bars; in this respect the new race more nearly resembles *M. g. mexicana*, and approaches *M. g. osceola* of Florida described by Scott, which has narrow, white bars on the primaries. The adult female is darker than that of the other races, and the decided dark ochraceous buff edgings will separate it from the white of *mexicana* and from the dark reddish chestnut of *M. gallopavo*. In the young of both sexes the edgings of all the feathers are paler or lighter than those of the adults, but in all cases the buff is present, while in the other races the edgings are either red or white.

It gives me pleasure to name this new Turkey after my friend, Mr. D. G. Elliot, who, both in his published works and in field study has, in a greater degree than any other ornithologist, made a specialty of the game birds of America.

THE DWARF SCREECH OWL (*MEGASCOPS FLAMMEOLUS IDAHOENSIS* MERRIAM).

BY DR. C. HART MERRIAM.

(Plate II.)

IN STUDYING the bird life of a limited area in the summer season it is usually possible to secure specimens of most of the diurnal species. Not so, however, with the Owls, and the difficulty increases inversely with the size, and is greatly augmented in the case of species that spend the day in holes in trees. As a rule these species are obtained by chance. Who has not heard small Owls about his camp fire at night for weeks, or even

months, without securing a single individual? Perhaps the most difficult kinds to get are the Pigmy, Saw-whet, and Flammulated.

In the summer of 1889 the writer and Mr. Vernon Bailey spent two months in the San Francisco Mountain region in Arizona. Our base camp was at Little Spring among the pines at the north foot of the mountain, and though small Owls were frequently heard at night, we were unable to obtain them. Dr. Mearns, who chanced to pass this same spring during a hurried military trip, had the good fortune to see a Saw-whet at the mouth of a Flicker's hole in a tall pine stump. He killed the bird, which "proved to be the parent of three young and an egg" (Auk, VII, 1890, p. 54). An equally accidental capture was that of the rare Flammulated Screech Owl shot by me at three o'clock in the morning while climbing out of the Grand Cañon of the Colorado by moonlight, Sept. 13, 1889. (N. Am. Fauna, No. 3, Sept., 1890, p. 91.) A third instance of the same kind was the chance capture, in the mountains of central Idaho, of the new Dwarf Screech Owl which is the subject of the present article. It was killed in a low pine tree on a mountain on the west side of Big Wood River, a few miles north of the town of Ketchum, Idaho, September 22, 1890.

The type of *Megascops flammeolus* came from Mexico, and for many years the species was known only from central Mexico and Central America; and it is probable that the type locality of the Idaho form is separated from that of *flammeolus* by about two thousand miles. The southern bird is larger and very much darker than the northern. The latter may be distinguished by the following description:—

"Similar to *M. flammeolus*, but smaller and paler. Wing, 125 mm.; tail, 62 mm. (measured from insertion of middle feathers). The back is only slightly paler than in *flammeolus*; the under parts are very much paler, the ground color being white and the vermiculations distant; the black markings are everywhere restricted. The facial ring is bright tawny ochraceous, and spreads out above so as completely to encircle the eyes; the cheeks are ash-gray, and the chin white. The dusky spots in the facial ring are inconspicuous; in true *flammeolus* they are strongly developed, sometimes forming a black ring which is merely tinged with tawny. The black spots on the

side are very much reduced in size, and seem to be arranged in a single row."

"Type, No. 119,654, ♂, ad., U. S. National Museum (Department of Agriculture collection). From Ketchum, Idaho, September 22, 1890. Collected by C. Hart Merriam and Vernon Bailey." (N. Am. Fauna, No. 5, Aug., 1891, p. 96).

The type specimen still remains unique. The accompanying colored plate is the work of Mr. John L. Ridgway.

RECENT LITERATURE.

Packard's 'The Labrador Coast.'* — The first twenty pages are devoted to a sketch of the physical geography of Labrador, followed by about forty pages of historical matter, devoted largely to a discussion of the early discovery of the country by the Norsemen. Chapter V, 'One of Fifty Days in Southern Labrador,' gives a general view of the country as seen from the standpoint of the naturalist. The next hundred pages are somewhat in the nature of an itinerary of two summer cruises along the coast, with descriptions of the scenery, and notes on the geology, and the various forms of animal and vegetable life met with. Then follow chapters on recent explorations, on the civil history of Labrador and its fisheries, and on the Labrador Eskimo. The four concluding chapters are devoted respectively to a systematic account of the zoölogy and botany of the Labrador Coast, and an extended bibliography of works and papers relating to Labrador (pp. 475–501). The list of plants is by Prof. John Macoun, Naturalist of the Department of the Interior, Canada. The list of birds is by Mr. Lucien M. Turner, reprinted from the Proceedings of the U. S. Natioual Museum (1885, pp. 233–254), "revised and brought down to 1891, by J. A. Allen."

The work is, in the main, a collection of previously published papers and memoirs, here brought together and revised, forming a valuable manual of our present knowledge of the Labrador coast. The narrative portions are entertainingly written, and contain passing references to the various species of birds met with. — J. A. A.

*The Labrador Coast. | A | Journal of two Summer Cruises | to that Region. | With Notes on its Early Discovery, on the Eskimo, | on its Physical Geography, Geology | and Natural History. | By | Alpheus Spring Packard, M. D., Ph. D., | .... [etc.= 2 lines of titles]. | —— | With Maps and Illustrations. | —— | New York: N. D. C. Hodges, Publisher, | 47 Lafayette Place. | London: Kegan Paul, Trench, Trübner & Co. | 1891.—8vo, pp. 7 + 513.

Lucas on the Osteology of the Paridæ, Sitta, and Chamæa.* — In this paper Mr. Lucas passes in review the principal osteological characters of these groups. The genera *Parus*, *Auriparus*, *Ægithalus*, and *Psaltriparus*, differ much from each other in cranial characters, and form a group much less homogeneous than the Swallows, Wrens, or Thrushes. *Sitta* differs so much from any of the Titmice that it seems proper to place it in a separate family from the *Paridæ*. *Chamæa*, as previously pointed out by Dr. Shufeldt (see Auk, VII, p. 278), appears to find its nearest relative in *Psaltriparus*, and not with the Wrens, as Mr. Lucas was formerly inclined to believe (see Auk, VII, p. 277). "It appears, then," says Mr. Lucas, "that in its cranial characters *Chamæa* is much like *Psaltriparus*, while the shoulder girdle is slightly, and the pelvic girdle decidedly, Wren-like. . . . On the other hand, none of the characters shown in the skeleton of *Chamæa* seems sufficient to warrant placing the genus either with the Wrens or Tits, but rather bear out the intermediate position indicated in the name Wren-tit." — J. A. A.

Lucas on the Structure of the Tongue in Hummingbirds.† — The tongue of the Hummingbird has generally been supposed to be tubular, but Mr. Lucas shows that this is not so, in a strict sense. Towards the tip "the tongue becomes forked, each division being a rod bordered by a wide flange of thin membrane," which curls upward and inward, so that toward the apex two very delicate parallel tubes are formed. The tubular part, however, "exists only for a short distance towards the anterior end, so that the common statement that the tongue of the Hummingbird consists of two parallel muscular tubes is quite erroneous." The width of the bordering membranes is found to vary in different genera. "Certainly there can be no sucking in the proper meaning of the word, since no vacuum can be formed at the back of the tongue, and liquids probably pass through the tubular portion by capillary attraction." A plate and figures in the text aid in giving a very clear idea of this peculiar mechanism. — J. A. A.

Lucas on the Bird Skeletons Collected by the U. S. Fish Commission Steamer 'Albatross.'‡ — These skeletons represent 33 species, mostly water birds, including *Creagrus furcatus*. A few notes are given on the osteology of the four species of Cormorants collected. — J. A. A.

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*Notes on the Osteology of the Paridæ, Sitta, and Chamæa. By Frederic A. Lucas. Proc. U. S. Nat. Mus., XIII, 1890, pp. 337–345, pl. xxvii.

†On the Structure of the Tongue in Hummingbirds. By Frederic A. Lucas. Proc. U. S. Nat. Mus., XIV, 1891, pp. 167–172, pl. iv.

‡Scientific Results of Explorations by the U. S. Fish Commission Steamer Albatross. XIII. Catalogue of Skeletons of Birds Collected at the Abrolhos Islands, Brazil, the Straits of Magellan, and the Galapagos Islands, in 1887–88. By Frederic A. Lucas. Proc. U. S. Nat. Mus., XIII, 1890, pp. 127–130.

Cherrie on Costa Rican Birds. — In two recent papers Mr. Cherrie has made known some of the more important results of his recent work on Costa Rican birds. The first* contains descriptions of two new genera, eight new species, and one new subspecies, as follows: (1) *Lophotriccus squammicristatus minor*, (2) *L. zeledoni*. (3) *Pachyrhamphus ornatus*, (4) *Deconychura* (gen. nov.) *typica*, (5) *Premnoplex* (gen. nov., type *Margornis brunnescens* Lawr.), (6) *Vireo superciliaris* (Ridgw. MS.), (7) *Basileuterus salvini*, (8) *Grallaria lizanoi*, (9) *Myrmiceza intermedia*. There are notes also on *Basileuterus delattrii*, restricting the name to the Costa Rican form, and renaming the Guatemalan form *B. salvini*, as above. The Atlantic and Pacific forms of *Arremon aurantiirostris* are found to present slight differences, and in view of their probably proving separable the name *Arremon aurantiirostris saturatus* is suggested for the dark-colored bird of the Atlantic slope.

In the second paper,† which is really a continuation of the first, being based on the same collection, contains an annotated list of 55 species, and is a paper of much interest and importance. The annotations are often based on large series of specimens, and relate to individual, seasonal, or other variations, with often extended tables of measurements, and critical remarks on the affinities and nomenclature of the species treated. *Dendrornis lawrencei* Ridgw. is considered a synonym of *D. nana* Lawr., as first shown by Mr. Elliot (Auk, VII, p. 174) and now conceded by Mr. Ridgway. The *D. lawrencei costaricensis* Ridgw. hence now becomes *D. nana costaricensis*. *Picolaptes gracilis* is also referred to *P. compressus*, of which measurements are given of 33 specimens. — J. A. A.

Shufeldt on the Osteology of Arctic and Sub-Arctic Water Birds.‡ — Since noticing this series of papers (Auk, VI, p. 333) Parts V to IX, have appeared, treating of the Puffins (Pt. V), Loons and Grebes (Pt. VI), Gulls and Jaegers (Pts. VII and VIII), and *Chionis* (Pt. IX). These Parts are illustrated by 43 cuts in the text and 7 beautifully executed plates, illustrating in detail the osteology of the various species treated. In respect to the Alcidæ, Dr. Shufeldt's conclusions bear out the arrangement of the minor subdivisions adopted in the A. O. U. Check-list, though written we are informed, before the publication of that work, except that in his opinion the positions of the genera *Uria* and *Plautus* should be transposed, *Uria* being more nearly related to the Gulls than either *Alca* or *Plautus*.

The Loons and Grebes are believed to be more closely related to each

*Description of New Genera, Species, and Subspecies of Birds from Costa Rica. By George K. Cherrie, Taxidermist and Ornithologist of the Costa Rica National Museum. Proc. U. S. Nat. Mus., XIV, 1891, pp. 337–346.

†Notes on Costa Rican Birds. Ibid., pp. 517–537.

‡Contributions to the Comparative Osteology of Arctic and Sub-Arctic Waterbirds. Parts V–IX. By R. W. Shufeldt, M. D., C. M. Z. S., etc. Journ. Anat. and Phys., XXIV, 1890, pp. 89–116, pll. vi–viii, pp. 169–187, pll. xi, xii, pp. 543–566, pl. xxv, 1891, pp. 60–77, 509–525, pll. xi, xii.

other than are the former to the Auks; in fact, so far as the skeleton goes, the Loons are ten times more nearly related to the Grebes than they are to any other group. Dr. Shufeldt would arrange the Grebes, Loons, and Auks in two 'suborders,' as follows: (1) Pygopodes, with two superfamilies — (*a*) Podicipedes, containing the Grebes, and (*b*) Cepphi, for the Loons; (2) Alcæ, with the following four families — Fraterculidæ, Phaleridæ, Alcidæ, and Allidæ. *Uria* is the Alcadine form most nearly allied to the Gulls.

The Sheathbills (*Chionis*) are considered as forming one of the links between the Gulls and Plovers, having, however, their nearest living allies in *Hæmatopus* and *Glareola*, though also retaining characters remotely allying them with the Columbo-gallinaceous group. — J. A. A.

Shufeldt on the Osteology and Classification of the North American Pigeons, Woodpeckers, and Kites. — In recent papers Dr. Shufeldt has discussed the classification of Pigeons, Kites, and Woodpeckers, from the standpoint of their osteological structure. The North American Pigeons* he considers as constituting two subfamilies, Columbinæ, containing all of the genera except *Starnœnas*, and Starnœnadinæ, consisting of the single genus *Starnœnas*.

The North American Kites† he refers to a family Milvidæ, with four subfamilies — Ictiniinæ, Elanoidinæ, Elaninæ, and Rostrhaminæ, the latter adopted provisionally, the osteology of this form not having been examined. Our Kites are found to differ "most markedly among themselves" in their osteological characters. *Elanoides* is found to share important skeletal characters with so distantly related a form as *Pandion*.

The Woodpeckers‡ are considered primarily in reference to their alleged saurognathism, of which he finds little evidence, to which is added a 'Summary of the Chief Osteological Characters of the North American Pici.' The Woodpeckers are held, in accordance with the views of most recent writers, to be a group coördinate in value with the Pigeons or the Parrots, and that they are more nearly allied to the Passeres "than to any other existing suborder of birds." — J. A. A.

Ridgway on New or Little-known Central American and South American Birds. — Mr. Ridgway has recently described a new Whippoorwill from Costa Rica§ under the name *Antrostomus rufomaculatus*, resembling *A. vociferus* in size and proportions, but more similar in coloration to

*On the Comparative Osteology of the United States Columbidæ. Proc. Zoöl. Soc. 1891, pp. 194-196. (2) Notes on the Classification of the Pigeons. Am. Nat., Feb. 1891, pp. 157, 158.

†Some Comparative Osteological Notes on the North American Kites. The Ibis April, 1891, pp. 228–232.

‡On the Question of Saurognathism of the Pici, and other Osteological Notes upon that Group. Proc. Zoöl. Soc., 1891, pp. 122–129.

§Description of a New Species of Whippoorwill from Costa Rica. By R. Ridgway. Proc. U. S. Nat. Mus., XIV, 1891, pp. 465, 466.

A. sericeocaudatus. It is based on a specimen from Volcan de Irazir, collected by Señor Anastacio Alfaro, director of the Costa Rica National Museum.

In a short notice of a collection of birds from the interior of Honduras,* Mr. Ridgway has described two new subspecies (*Platypsaris aglaiæ hypophæus* and *Pithys bicolor olivaceus*), and the female and young male of *Gymnocichla chiroleuca* Scl. and Salv., and a young male of *Grallaria guatemalensis* Prév., previously undescribed. He also records 13 other species as of interest on account of the locality. He has also described as new *Thamnophilus albicrissa* and *T. trinitatis* from Trinidad,† and published remarks on *Xiphocolaptes procurvus* Cab., and *X. albicollis* Licht.,‡ and on *Pachyrhamphus albinucha* Burm.,§ which he makes the type of a new genus *Xenopsaris*. In a paper on Costa Rican birds,‖ he has given notes on 10 species, including two described as new (*Platypsaris aglaiæ obscurus* and *Scytalopus argentifrons*). *Picolaptes gracilis* Ridgw. is thought to have been based on a young example of *P. compressus*.

He has also reviewed the genus *Sittasomus*,¶ of which he recognizes seven species, two of which (*S. chapadensis* and *S. æquatorialis*) are described as new. This is an addition of four to the three recently admitted by Dr. Sclater (Cat. Bds. Brit. Mus., Vol. XV, 1890). Mr. Ridgway's review is based on a series of 44 specimens, including the types of *S. olivaceus* Wied and *S. amazonus* Lafr.

Two other recent papers by the same author relate to North American birds, one of them treating of *Porzana jamaicensis coturniculus* Baird,** which he finds is closely related to *P. spilonota* of the Galapagos Islands. He proposes to recognize it provisionally as a distinct species, under the name *Porzana coturniculus*. The original type of the species remains unique. (*Cf.* Auk, IX, p. 108.) The other paper describes a new Sharp-tailed Sparrow from California,†† under the name *Ammodramus caudacutus becki*, based on a single specimen from Santa Clara County. (*Cf.* Auk, IX, p. 108.)—J. A. A.

Ridgway and Bendire's Directions for Collecting and Preparing Birds and their Eggs and Nests.—In twenty-seven pages of Bulletin No. 39 of

*Notes on Some Birds from the Interior of Honduras. Proc. U. S. Nat. Mus., XIV, pp. 467–471.

† Description of Two Supposed New Forms of *Thamnophilus*. *Ibid.*, p. 481.

‡ Further Notes on the Genus *Xiphocolaptes* of Lesson. *Ibid.*, XIII, pp. 47, 48.

§ Note on *Pachyrhamphus albinucha*, Burmeister. *Ibid.*, XIV, pp. 479, 480.

‖ Notes on Some Costa Rican Birds. *Ibid.*, XIV, pp. 473–478.

¶ Notes on the Genus *Sittasomus* of Swainson. *Ibid.*, pp. 507–510.

** Observations on the Farallon Rail (*Porzana jamaicensis coturniculus* Baird). *Ibid.*, XIII, pp. 309–311.

†† Description of a New Sharp-tailed Sparrow from California. *Ibid.*, XIV, pp. 483, 484.

the United States National Museum Mr. Ridgway* gives very full and explicit directions for collecting birds for scientific purposes, under the following subheadings: (1) 'General Remarks,' (2) 'Outfit for Collecting,' (3) 'Procuring Specimens,' (4) 'Preparing and Preserving Specimens,' (5) 'Packing Specimens for Shipment,' and (6) 'Records.'

Captain Bendire, in a paper of ten pages† gives similar directions for collecting, preparing, and preserving birds' eggs, and nests. Both papers are illustrated with cuts of implements to be employed, etc., and having been prepared by experts of long experience may be relied upon as being in the highest degree trustworthy.—J. A. A.

Stejneger on a Collection of Birds from Japan.‡—In a paper of about ten pages Dr. Stejneger gives notes on a first instalment of birds from the Science College Museum of Tokyo, Japan, sent him for examination. Of some thirty-five species here annotated several prove to be additions to the Japanese avifauna. Among these is *Bulweria bulweri*, *Falco pealei*. *Emberiza leucocephala*, and *E. pusilla*. Important critical notes occur in relation to the species of *Phaëton* and *Cuculus*.—J. A. A.

Stejneger on the Cubital Coverts in the Birds of Paradise and Bower Birds.§—This paper is apropos of Mr. Goodchild's paper on 'The Cubital Coverts of the Euornithæ in Relation to Taxonomy' (Proc. Roy. Phys. Soc. Edinb., X, pp. 317–333, pl. xv). Dr. Stejneger finds that the arrangement of the cubital coverts in these birds conforms to that in the other Passeres, instead of to that of the Cypseliformes, as claimed by Mr. Goodchild. Dr. Stejneger's examinations thus tend rather to strengthen Mr. Goodchild's estimate of the considerable value of the arrangement of the cubital coverts in birds as a taxonomic character.—J. A. A.

Stone on the Birds of Harvey's Lake, Luzerne County, Pennsylvania.‖ Mr. Stone gives an annotated list of 54 species observed June 15–20, 1891, prefaced by an account of the position and general character of the region in question, and remarks on its faunal relations. It is "situated

*Directions for Collecting Birds. By Robert Ridgway. Part A of the Bulletin of the United States National Museum, No. 39. 1891. 8vo. pp. 27.

†Directions for Collecting, Preparing, and Preserving Birds' Eggs and Nests. By Charles E. Bendire, Part D of Bulletin of the United States National Museum, No. 39. 1891. 8vo. pp. 10.

‡Notes on Japanese Birds contained in the Science College Museum, Imperial University, Tokyo, Japan. By Leonhard Stejneger. Proc. U. S. Nat. Mus. XIV, 1891, pp. 489–498.

§ Notes on the Cubital Coverts in the Birds of Paradise and Bower Birds. *Ibid.*, pp. 499, 500.

‖ The Summer Birds of Harvey's Lake, Luzerne Co., Pennsylvania, with Remarks on the Faunal Position of the Region. By Witmer Stone. Proc. Acad. Nat. Sci. Phila. 1891, pp. 431–438.

in what is known as the Alleghanian faunal belt, with a strong tinge of the Canadian fauna in the deep forests, and a slight Carolinian element in the lower clearings." The elevation of the lake is 1250 feet above sea-level, while the mountains around it rise 100 to 150 feet higher. With Mr. Dwight's paper on 'The Summer Birds of the Crest of the Pennsylvania Alleghanies,' published in the present nnmber of 'The Auk,' and the various other recent contributions to the same subject, the bird fauna of the Alleghanian region, from Pennsylvania southward, bids fair to become soon well known. — J. A. A.

Allen on the North American Colaptes.* — As there are doubtless many readers of 'The Auk' who will not be so fortunate as to see this paper, it seems desirable on account of its great interest and importance to present a brief summary of its contents.

After mentioning the sources of the material (785 specimens) on which his study of this group is based, and referring to the several theories that have been suggested as to the relationships between *C. auratus* and *C. cafer*, the author proceeds to state the distinctive characters and geographical distribution of each member of the genus that is found north of Panama. The distribution is well illustrated by a map.

C. mexicanoides of Guatemala is essentially *C. cafer* with the coloration intensified, the black dorsal bars broadened, rump spotted with black, entire top of head and nape rufous, quills and malar stripe a deeper, darker red. Its habitat very probably reaches to that of *C. cafer* which species is found from the southern border of Mexico northward throughout Mexico, excepting western Sonora and Lower California, and from the eastern base of the Rocky Mountains to the Pacific north to British Columbia. "*C. rufipileus*, from Guadalupe Island, off Lower California, is an insular form of *cafer*, differing . . . . mainly in smaller size, much longer bill, and rather deeper colors, in this latter respect rather more resembling *C. cafer saturatior* of the Northwest Coast," which differs from *cafer* "in slightly larger size and much deeper colors."

C. chrysoides ranges through most of Lower California and parts of Sonora, southern Arizona, and southeastern California. "To the northward and eastward its habitat thus reaches, and at some points (at least in winter) overlaps, that of *C. cafer*, with which, however, it appears never to blend." It is "a small, pale form presenting the general appearance of *mexicanoides*," but having the quills golden as in *auratus*, though possessing no other of the distinctive characters of the Eastern form.

"*C. auratus* while ranging over the northern and eastern three fourths of the continent of North America, has also two outlying insular forms,

*The North American Species of the Genus *Colaptes*, considered with Special Reference to the Relationships of *C. auratus* and *C. cafer*. By J. A. Allen. Bulletin American Museum of Natural History, New York, Vol. IV, No. 1, Article II, pp. 21–44, map. Author's edition published March 8, 1892.

C. chrysocaulosus of Cuba, and *C. gundlachi* of Grand Cayman, both evidently offshoots from the *auratus* stock, modified by environment, and differing from *auratus* somewhat as *mexicanoides* differs from *cafer*."

Of the three groups into which these forms may be classed, (1) *cafer-mexicanoides*, (2) *chrysoides*, and (3) *auratus*, "the first and the last, so far as features of coloration are concerned are the most unlike, having no special characters in common, and yet it is these two, *cafer* and *auratus*, which, as shown by the material now in hand, thoroughly intergrade wherever their habitats meet, that is, over a belt of country from 300 to 400 miles wide, and some 1200 to 1500 miles long. They are also more or less mixed from the eastern border of the Great Plains westward to the Pacific Coast, from about the latitude of 38° northward to about latitude 55°." The intermediates between the two vary "from individuals of *C. auratus* presenting only the slightest traces of *C. cafer*," or vice versa, "to birds in which the characters of the two are about equally blended. Thus we may have *C. auratus* with merely a few red feathers in the black malar stripe, or with the quills merely slightly flushed with orange, or *C. cafer* with either a few black feathers in the red malar stripe or a few red feathers at the side of the nape, or an incipient barely traceable scarlet nuchal crescent." Where the mixture of characters is more complete, an unsymmetrical combination is the rule. The quills of wings or tail may be some red and others yellow; "a bird may have the general coloration of true *cafer* combined with a well developed nuchal crescent, or nearly pure *auratus* with the red malar stripes of *cafer*"; sometimes the body plumage is of one form, the head of the other. In short there are "almost endless variations, it being rare to find, even in birds from the same nest, two individuals alike in all their features of coloration."

East of the Mississippi, with rare exceptions, the *cafer* characters outcropping in *auratus* are confined to traces of red in the malar stripe which are to be seen in "perhaps one male in a thousand (or more probably a still smaller proportion)." This occurs about equally throughout this area, "quite as frequently along the Atlantic seaboard as at any point east of the Mississippi River." Nearly pure *auratus* probably "prevails westward to the eastern border of Texas, Indian Territory, Kansas and Nebraska, and over the greater part of both Dakotas and Manitoba." Throughout the Plains mixed birds are the rule, though in winter in the more southern portions there is some influx of both *auratus* and *cafer*. From central Colorado and western Texas to Nevada and southern California nearly pure *cafer* prevails in the breeding season, though mixed birds are not uncommon in winter. From Wyoming and Montana west to the Cascades the mixed birds occur with but few exceptions, while from Puget Sound southward to central California are found mixed birds together with nearly pure representatives of both *cafer* and *auratus*.

All this array of evidence, to which scant justice can be done here, but which Mr. Allen has marshalled so admirably, leads him to re-affirm the hypothesis, originally suggested by Baird, "of hybridization on a grand

scale between *Colaptes auratus* and *C. cafer*." This conclusion seems inevitable, for, while the transition between geographic races is apt to be gradual and symmetrical, what we have here is quite the reverse, an utterly irregular intergradation with, at the same time, all sorts of asymmetrical combinations of the characters of the two birds.

Mr. Allen has investigated also the geographical, individual and seasonal variation among the Flickers, with interesting results. Geographical variation in size amounts in *C. auratus* to about 10 per cent in the length of wing between Arctic America and southern Florida, while the West Indian forms are even smaller. The difference between *C. c. saturatior* and *C. rufipileus* is nearly parallel to this, but in *C. cafer* itself the variation is less uniform with latitude, being perhaps complicated, Mr. Allen suggests, by opposing effects of altitude. *C. chrysoides* shows hardly any difference in size geographically. In the Florida *auratus*, though it is smaller and darker than the northern bird, the average difference "proves too slight and too inconstant, in either size or color, to make a separation practicable."

Individual variation is considerable, both in size and in color. The bill varies in length from 15 to 25 per cent, the wing from 8 to 12, the tail from 12 to 18. In color the variation "affects (1) the size and shape of the circular black spots on the lower plumage, (2) the width and number of the dusky crossbars of the upper plumage, (3) the size and form of the malar stripe, (4) the presence or absence of black spots on the white rump, (5) the tone of color suffusing the general plumage." These variations are discussed in detail, as is the tendency in the females to develop a malar stripe.

The only seasonal changes in color are those due to fading and abrasion.

Throughout the group the nestling plumage differs from the adult chiefly in showing more or less red in the crown and in having the markings in general coarser and heavier. An interesting variation is shown in the malar stripe which in the adults is so prominent, and yet so unstable, a character. Young *C. auratus* shows in both sexes the black malar stripe that in the adult is confined to the male. In *C. chrysoides*, *C. cafer*, and *C. c. saturatior* this marking is red in the male, and rufous in the female, as in the adults.—C. F. B.

Chapman on the Origin of the Avifauna of the Bahamas.* — Mr. Chapman gives a general review of the bird life of the Bahamas, grouping the species, in accordance with their distribution, primarily into two classes: (1) those of more or less general distribution, numbering 32 species, and (2) species peculiar to the Bahamas, 24 in number. The species of the first class are further divided, as regards their distribution, into cos-

* The Origin of the Avifauna of the Bahamas. By Frank M. Chapman. American Naturalist, June, 1891, pp. 528–539.

mopolitan, continental, North American, West Indian, etc., while those of the second class are compared in detail with their nearest allies. His conclusions are (1) that the Avifauna of the Bahamas is strongly West Indian, and that this group of islands is entitled to rank as a fauna of the Antillean region, the endemic species having been derived from West Indian stock, with a slight intrusion from Florida; (2) that Cuba has been the source of the greater number of forms; (3) that while North American species occur numerously as migrants, they have not assisted in forming the resident avifauna; (4) that the avifauna is of comparatively recent origin; (5) that forms having a common ancestry, and which now occupy widely separated areas, may have become so differentiated as to resemble more each other than they do the original stock (*e.g.*, *Geothlypis beldingi* of Lower California as compared with the Bahama and Florida forms, with nearly parallel cases in the genera *Spindalis*, *Vireo*, and *Certhiola*); (6) that certain Bahaman forms, occupying contiguous islands, have become differentiated under practically the same climatic or physiographic conditions — in other words, simply through isolation; (7) that we may probably assume that some of these endemic forms owe their origin primarily to features of individual variation, which through isolation, and hence close interbreeding, have become permanent. Several of these important generalizations we do not remember to have seen previously stated. The paper is thus of unusual interest.— J. A. A.

Chapman on the Grackles of the Subgenus Quiscalus.*— This interesting discussion of a highly perplexing subject — the relationships of our Grackles — is the result of the study of a series of over eight hundred skins, largely of breeding males, from many widely separated localities. This series shows the breeding range of *æneus* to extend from Texas and Louisiana to Great Slave Lake, "and from the eastern slopes of the Rockies to the western slopes of the Alleghanies, while from Massachusetts to Nova Scotia it reaches the Atlantic seaboard; *Quiscalus quiscula aglæus* is typically represented from New Orleans to Charleston, and southward to the extreme point of the Florida peninsula; and *Quiscalus quiscula* breeds from the northern limit of the range of *aglæus* northward to the southern limit of the range of *æneus* in the lower Connecticut and Hudson River Valleys."

As a preliminary to the discussion of their relationships, a detailed description is given of the coloration of each form, especially of *quiscula*, of which lack of space unfortunately permits us to quote but little.

In *æneus*, throughout its range, aside from a trifling seasonal, and considerable sexual, difference in brilliancy, there is practically no variation in the colors of the plumage, except of the head and neck which in both

*A Preliminary Study of the Grackles of the Subgenus *Quiscalus*. By Frank M. Chapman. Bulletin American Museum of Natural History, Vol. IV, No. 1, Article I, Feb. 25, 1892, pp. 1–20; map.

æneus and *quiscula* seem to vary with the individual independently of the coloring of other parts. Of the plumage of the head and neck "there are three types of coloration with their various degrees of intergradation. Briefly, these are (1) the purple type with more or less bronzy reflections, this closely resembling the color of the same parts in *aglæus*; (2) the steel-green or bluish-green; and (3) the steel-blue or purplish blue, previously described, which occurs in about twenty-five per cent of the specimens examined."

"Omitting all reference to the color of the head, as too variable a character to be used in diagnosis, we may know *æneus* as a bird in which the back and under parts are metallic brassy, or olivaceous bronze without iridescent bars in any part of the plumage. *Quiscula* assumes three phases of coloration which merge into one another in the order named: first, the bottle-green; second, the bronze-purple; and third, the brassy bluish green. In each of these phases the feathers of the back and under parts are banded with iridescent bars of varying extent. *Quiscalus quiscula aglæus* represents the highest development of phase No. 1 of *quiscula*." The reader must not infer that all or nearly all specimens of *quiscula* agree at all typically with one or the other of these three 'phases.' For instance in a series of 51 from West Chester, Penn., only about half that number could be referred to either of them, the remainder being variously intermediate between them.

Mr. Chapman proceeds to consider the series (of breeding males) of *quiscula* in geographical sequence from the south northward, grouping them by States, and noting the numbers, actual and relative, in each group that can be referred to each 'phase' or are intermediate between them. The results are tabulated and show, for so limited a series (between three and four hundred), a fairly steady gradation from *aglæus* ('phase No. 1') toward *æneus*. His conclusions, as to the facts, are as follows: " (1) *Quiscalus æneus*, throughout a breeding range which extends from the Rio Grande Valley to British America and New Brunswick, varies in coloration only in that comparatively limited part of its habitat adjoining the area occupied by *Quiscalus quiscula*, with which, at least from Pennsylvania to Massachusetts, it completely intergrades. (2) *Quiscalus quiscula*, an extremely variable form, assumes three phases of coloration; the first reaches its extreme development at the southern limit of the bird's range where the third phase is unknown, while the third phase is most highly developed at the bird's northern limit, where the first phase is unknown. The second phase connects the first and third, and is rarely found at either extreme, but is most abundant near the centre of the bird's habitat where, it is to be noted, all three phases with their connectants, occur together. (3) The exact relationships of *quiscula* and *æneus* in the lower Mississippi Valley and northward along the Alleghanies to Pennsylvania are not at present known. (4) In the Alleghanies of Pennsylvania, in the Hudson Valley from Sing Sing to Troy, in eastern Long Island, in Connecticut, and in Massachusetts as far north as

Cambridge, *quiscula* and *æneus* completely intergrade. (5) This intergradation is in every instance accomplished through phase No. 3 of *quiscula*."

From his measurements Mr. Chapman concludes that "the differences in size, which exist between these three forms, are too slight to be of diagnostic value in individual cases, the range of variation in either form completely overlapping the average differences."

"*Quiscalus æneus* presents slight but regular increase in size northward . . . . On the whole it appears to be a somewhat smaller bird than *quiscula*, with perhaps a slightly longer tarsus."

"In *aglæus* and *quiscula*, in passing from the South northward we find about the same increase in size shown by *æneus*; the wing and tail become longer, the bill thicker, but the length of this member decreases; Florida specimens having an actually, as well as relatively, longer bill than northern specimens."

The author seeks an explanation of the intergradation from *æneus* into *quiscula*, and finds it, to his own satisfaction, by assuming that it is due to hybridity between two distinct species. That it is a case of geographical variation he considers impossible, for, he says, we know of no differences of environment between the regions inhabited by the two forms, sufficient to cause the differences between them, and he thinks further that it is contrary to known laws of geographical variation for a form to continue as constant as *æneus* throughout a wide area and then abruptly change into one as different as *quiscula*.

It appears almost as if he had overlooked what certainly seems to be the simplest explanation of the facts, — that it is a case of geographical intergradation between two subspecies, one, *aglæus*, inhabiting the peninsula of Florida and the adjacent coasts, the other, *æneus*, spread over a large area in the West and North; between them a gradual intergradation from one into the other, every step of which Mr. Chapman has shown us in his 'phases' 'No. 2' and 'No. 3' and the many specimens intermediate between them. From this point of view the greater part of the series he calls *quiscula* — all, indeed, that are usually called by that name — are to be considered as intermediates of varying degree between the two subspecies *aglæus* and *æneus*, each of which, within its own territory is as constant as a subspecies can be fairly expected to be.

If we resort to the theory of hybridity between *æneus* and *quiscula* which he is inclined to accept, our way is not without stumbling blocks. According to this view the *æneus* blood has mingled in the veins of *quiscula* to a greater or less degree the nearer or farther from the habitat of *æneus* the impure *quiscula* is bred. But why should this corruption of the *quiscula* stock have penetrated nearly the whole of the area the bird occupies, while the territory of *æneus* has not been invaded at all by the other? If hybridization had gone on to such an extent we should expect to see at least some traces of *quiscula* blood cropping out now and then through the wide range of country that *æneus* inhabits. But such mongrels do not appear. — C. F. B.

Newton on 'Fossil Birds.'* — This is a brief survey of our present knowledge of fossil birds, the subject being treated in outline. It is, however, an important and instructive summary of the subject, presented by an eminent authority. As indicated by the title, it formed one of the long series of important papers read at the Second International Congress held last year at Budapest. — J. A. A.

Sclater on the Geographical Distribution of Birds.† — In this paper of some thirty-five pages, Dr. Sclater has summarized the recent progress in our knowledge of the geographical distribution of birds, the period covered being mainly the interval since the publication of his well-known address on Geographical Zoölogy delivered before the Biological Section of the British Association at its meeting at Belfast in 1875. He briefly restates, with some qualifications, his views then and previously set forth, respecting the principal faunal regions and subregions of the earth's surface, based on a study of the geographical distribution of birds, and notes, *passim*, the leading recent authorities upon their ornithology. This is followed by an appendix of eight pages, in which are given the titles of the principal publications referred to, 125 in number. This list, with that contained in his British Association Address, forms a most convenient and useful guide to the more important works and papers bearing on the special subject here treated.

As is well known, Dr. Sclater's division of the earth's surface into six primary ontological divisions of coördinate value has been the subject of criticism from many sources; yet, while practically admitting that some other method of division might prove more in accordance with facts, he expresses himself as in the main, "after more than thirty-five years close attention to the subject," well satisfied with his own system, and believes (with Wallace, whose adoption of his principal regions he "points out with pride") that, in the words of Mr. Wallace, "in geographical equality, compactness of area, and facility of definition, they are beyond all comparison better than any others that have yet been proposed for the purpose of facilitating the study of geographical distribution" — as though "practical convenience," instead of the facts of distribution, were to be the deciding test in favor of this or that author's scheme! Thus, as Dr. Sclater says, many writers on zoö-geography have treated his "Nearctic Region as merely a piece of the Palæarctic," and he admits that "there are, no

* Fossil Birds. From the forthcoming "Dictionary of Birds." Delivered before the Second International Ornithological Congress, on the 18 May, 1891, by Alfred Newton, M. A., Prof. Zoöl. and Comp. Anat., etc., Cambridge, Magdalene College. Budapest, published at the Office of the Congress, 1891, 4to, pp. 16.

† The Geographical Distribution of Birds; an Address delivered before the Second International Ornithological Congress at Budapest, May, 1891, by Philip Lutley Sclater M. A., Ph. D., F R. S., Secretary to the Zoölogical Society of London. Budapest, 1891. Published at the Office of the Congress. 8vo., pp. 45.

On Recent Advances in our Knowledge of the Geographical Distribution of Birds. By P. L. Sclater, M. A., Ph. D., F. R. S. Ibis, Oct., 1891, pp. 514–557.

doubt, grounds upon which this view may be supported"; but then the *inconvenience* of considering it a subregion of a primary circumpolar region must be duly regarded!

Dr. Sclater's paper was prepared for presentation at last year's International Ornithological Congress, and forms one of the memoirs published by the Congress; it also appears, as noted above, under a somewhat different and more explicit title, and "slightly modified," in 'The Ibis' for October last.—J. A. A.

. **Sclater and Shelley on the Scansores and Coccyges.*** — Volume XIX of the British Museum Catalogue of Birds treats of seven families of birds, as follows: Rhamphastidæ, Galbulidæ, and Bucconidæ, by Mr. Sclater, and Indicatoridæ, Capitonidæ, Cuculidæ, and Musophagidæ, by Mr. Shelley. The number of species recognized is 448, of which only 32 are not represented in the British Museum. The total number of specimens belonging to these families in the British Museum collection is 9231, among which are 123 types of species, of which 73 are admitted as valid.

The work is similar in character to that of the preceding volumes, and therefore calls for no special comment. One genus and five species and subspecies appear to be here for the first time named, as follows: (1) *Urococcyx* Shelley, gen. nov., p. 398 (type *Phœnicophæus erythrognathus* Hartl.); (2) *Xantholæma intermedia* Shelley, p. 97; (3) *Capito salvini* Shelley, p. 119, pl. v, fig. 4; (4) *Brachygalba fulviventris* Sclater, p. 172; (5) *Coccyzus dominicæ* Shelley (subsp. of *C. minor*), p. 306, pl. xii, fig. 1; and (6) *Centropus purpureus* Shelley, p. 348, pl. xiii.

In view of Mr. Shelley's treatment of *Coccyzus minor*, of which he recognizes two subspecies — *maynardi* Ridgw. and *dominicæ* subsp. nov. — we are surprised that he should lump all of the large Piayas under *Piaya cayana*, considering the wide distribution of the group, and the great range of variation in both size and color shown by specimens from distant points in the common habitat. Doubtless the extremes grade into each other through birds from intermediate localities, yet the birds from Mexico, Guatemala, Cayenne, and southern Brazil present average differences too well marked to be wholly ignored.

The volume is a most welcome continuation of this long series of invaluable handbooks.—J. A. A.

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* Catalogue | of the | Picariæ | in the | Collection | of the | British Museum. | —— | Scansores and Coccyges, | containing the Families | Rhamphastidæ, Galbulidæ, and Bucconidæ, | by | P. L. Sclater, | and the Families | Indicatoridæ, Capitonidæ, Cuculidæ, | and Musophagidæ, | by | G. E. Shelley. | London: | Printed by order of the Trustees. | Sold by | Longmans & Co., 39 Paternoster Row; | B. Quaritch, 15 Piccadilly; Asher & Co., 13 Bedford Street, Covent Garden; | Kegan Paul, Trench, Trübner & Co., 57 Ludgate Hill; | and at the | British Museum (Natural History), Cromwell Road, S. W. | 1891. 8vo. pp. xii+484, pll. xiii.= Vol. XIX of the Catalogue of the Birds in the British Museum.

Hartert's Catalogue of the Birds in the Museum of the Senckenberg Natural History Society.* — The bird collection of the Senckenberg Museum contains much historic material, as shown in the author's account of the origin and growth of this important collection, which appears to number nearly 4000 species. The collection was begun in 1820, through the purchase of the collections of the well-known ornithologists Wolf and Meyer, consisting chiefly of birds of Central Europe. Subsequently was added the greater part of Rüppell's collection from northeastern Africa, and many from various noted South American expeditions, as well as from other historic sources. Mr. Hartert considers it necessary to recognize subspecies, and freely adopts trinomials for their designation. He accepts the tenth edition of Linné's 'Systema Naturæ' as the starting point of nomenclature, and considers that strict adherence to the principle of priority is the only w: to secure stability of names. He is thus in hearty accord with the recent innovations in respect to principles of nomenclature reflected in the A. O. U. Code and so emphatically endorsed by the International Ornithological Congress held last year at Budapest.

The 'Catalogue' is a systematic list of the species (without synonymy) in the Museum, with a record of the specimens by which each species is represented, with sex and locality, and apparently the exact date of collection when this is known. Questions of nomenclature and other technical matters are discussed in foot-notes, frequently at considerable length. These give to the 'Catalogue' an interest and importance to the general ornithologist far beyond that of a mere catalogue of the species and specimens contained in the museum to which it relates. Were we disposed to be hypercritical we might ask why, in a number of cases, certain names were adopted and others rejected, since the rulings are clearly at variance with the principle of priority. We fancy, however, these few cases are due to oversight, or from lack of time to personally verify all the points at issue in a work of this magnitude, when we read that the revision of the collection and the preparation of the Catalogue was performed in the short space of nine and a half months! (see p. vii). — J. A. A.

Leverkühn's 'Fremde Eier im Nest.'† — Dr. Leverkühn's 'Eggs of another bird in the nest' is an exhaustive treatment of what at first sight seems an unimportant and not especially interesting subject, but with true German patience and minuteness he has brought together a surprising amount of information, much of which has an interesting bearing on the habits and behavior of birds under unusual circumstances in respect to the imposition of other birds' eggs in their nests.

*Katalog des Vogelsammlung im Museum der Senckenbergischen Naturforschenden Gesellschaft in Frankfurt am Main. Von Ernst Hartert. Januar 1891. Frankfurt a. M. 8vo. pp. xxii, 259.

†Fremde Eier im Nest. Ein Beitrag zur Biologie der Vögel, von Paul Leverkühn. Nebst einer Bibliographischen Notiz über Lottinger. 1891. Berlin, Wien, Leiden, London, Paris, and New York. 8vo. pp. xi, 212.

The memoir is divided into two parts, entitled respectively 'special' and 'general.' The first part, treating of the behavior of birds in relation to strange eggs in their nests, is divided into (*A*), in respect to eggs of the same species, (1) when laid by birds, (2) when placed there by man; (*B*) in respect to eggs of other species, (1) when placed there by man, (2) when laid by birds. Numerous cases are cited where two or more females of the same species lay in the same nest, and various experiments are recounted where eggs have been introduced into birds' nests for the purpose of noting the behavior of the owners of the nest under the novel intrusion. Considerable space is given to the consideration of the behavior of domesticated birds (pigeons, common fowls, ducks, etc., and cage birds), when other than their own eggs are given them for incubation; while many experiments are recounted of placing small hen's eggs in owl's nests, and various wild birds' eggs in the nests of other species. Mr. Leverkühn's essay contains much curious and interesting information, of which a convenient digest is given in tabular form in the second part. — J. A. A.

Jäckel's Birds of Bavaria.* — This posthumous work, edited by Dr. Rudolf Blasius, embodies the results of the careful and long-continued field studies of Pastor Jäckel upon the birds of Bavaria. The work, as implied in the title, treats of their habits, distribution, migrations, etc., the accounts of the different species varying in length from a few lines to many pages (nearly twenty are given to the Steinadler (*Aquila fulva*). The number of species treated is 312. The nomenclature is not the most recent, being that employed by Keyserling and Blasius in their 'Die Wirbelthiere Europas,' published in 1840.

The editor's introduction gives a sketch of the author's life, a list of his principal ornithological papers (1848–1875), and the circumstances attending the publication of the present book. Jäckel died on the 12th of July, 1885, after a long period of ill health; during the last ten years of his life he published very little, although he continued to make observations till 1884, which he transmitted to the German Committee on Bird Migration, of which Dr. Blasius was president. Dr. Blasius speaks of him as being little known to the younger ornithologists, though entitled to a place in the front rank of the students of Bavarian birds, mammals and fishes; and believes that his 'Vögel Bayerns' will give him always a place in the list of German naturalists. Dr. Blasius has himself contributed much to the value of the work, which he has brought down to date, through the coöperation of numerous correspondents to whom he sent circulars of inquiry respecting many of the rarer species. These additions appear as inedited notes, signed with his initials. — J. A. A.

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*Systematische Uebersicht der Vögel Bayerns mit Rücksicht auf das örtliche und quantitative Vorkommen der Vögel, ihre Lebensweise, ihren Zug und ihre Abänderungen. Von Andreas Johannes Jäckel. Herausgegeben von Prof. Dr. Rudolf Blasius. München und Leipzig, 1891. 8vo. pp. xxiv, 392. Frontispiece (portrait of the author).

Minor Ornithological Publications. — There are various scientific societies and institutions whose serial publications, though not chiefly ornithological, yet occasionally contain matter relating to North American birds. The following is a record of such papers, not already noticed in this department, from 1879 to 1890 inclusive, in all of these serials accessible to the compiler. Readers who know of other similar publications that have contained in these years any contributions to ornithology, are earnestly requested to send their titles to the Associate Editor.

Proceedings of the Boston Society of Natural History.

Since last noticed here (Auk, Vol. II, p. 373) these Proceedings have contained only these (Nos. 2204, 2205).

2204. *Note on the Epidermal System of Birds.* By. J. Amory Jeffries, M. D. '*Proceedings of the Boston Society of Natural History*,' **Vol. XXIII**, March, 1888, pp. 358–360.

2205. *Notes on Some Type Specimens of American Troglodytidæ in the Lafresnaye Collection.* By Robert Ridgway. *Ibid.*, pp. 383–388. — See Auk, VI, 172.

Bulletin of the Buffalo Society of Natural Sciences.

In Vols. IV and V, Nos. 1–3, are these (Nos. 2206–2209).

2206. *Imitative and Ventriloquial Power of Birds.* By E. E. Fish. '*Bulletin of the Buffalo Society of Natural Sciences*', **Vol. IV**, No. 1, July, 1881, pp. 23–25. — A few notes on birds' songs.

2207. *On the Domestication of Some of our Wild Ducks.* By Charles Linden. *Ibid.*, No. 2, Jan., 1882, pp. 33–39.

2208. *Nidification of Birds on the St. Clair Flats.* By Rev. J. H. Langille. *Ibid.*, **Vol. V**, No. 1, [Feb. ?], 1886, pp. 33–39. — Chiefly water birds.

2209. *Ventriloquial and Imitative Power of Birds.* By E. E. Fish. *Ibid.*, No. 2, [Aug. ?], 1886, pp. 72–80.

Bulletin of the California Academy of Sciences.

In the volumes of this 'Bulletin' so far issued, Vols. I and II (= Nos. 1–8), 1884–1887, there have been the following (Nos. 2210–2214).

2210. *Additions to the Ornithology of Guadalupe Island.* By Walter E. Bryant. '*Bulletin of the California Academy of Sciences*,' **Vol. II**, No. 6, Jan. 5, 1887, pp. 269–318. — See Auk, IV, 154.

2211. *Ornithological Observations in San Diego County.* By W. Otto Emerson. *Ibid.*, No. 7, June 3, 1887, pp. 419–431.

2212. *Discovery of the Nest and Eggs of the Evening Grosbeak* (*Coccothraustes vespertina*). By Walter E. Bryant. *Ibid.*, No. 8, July 23, 1887, p. 449.

2213. *Description of a New Subspecies of Petrel from Guadalupe Island.* By Walter E. Bryant. *Ibid.*, pp. 450, 451. — *Oceanodroma leucorhoa macrodactyla.*

2214. *Unusual Nesting Sites. I.* By Walter E. Bryant. *Ibid.*, pp. 451–454.

Proceedings of the California Academy of Sciences.

The first series of the 'Proceedings' ended in 1876. Vols. I and II (1887–1889) of the second series contain the following (Nos. 2215–2223).

2215. ***Unusual Nesting Sites. II.*** By Walter E. Bryant. '*Proceedings of the California Academy of Sciences*,' 2d Series, **Vol. I**, 1888, pp. 7–10.

2216. ***Birds and Eggs from the Farallon Islands.*** By Walter E. Bryant. *Ibid.*, pp. 25–50.

2217. ***Description of a New Subspecies of Song Sparrow from Lower California, Mexico.*** By Walter E. Bryant. *Ibid.*, pp. 197–200. — *M. f. rivularis.*

2218. ***Description of a New Thrush from Calaveras County, California.*** By L. Belding. *Ibid.*, **Vol. II**, 1889, pp. 18, 19. — *Turdus sequoiensis.*

2219. ***Descriptions of the Nests and Eggs of Some Lower Californian Birds, with a Description of the Young Plumage of Geothlypis beldingi.*** By Walter E. Bryant. *Ibid.*, pp. 20–24.

2220. ***The Small Thrushes of California.*** By L. Belding. *Ibid.*, pp. 57–72.

2221. ***New Birds from Lower California, Mexico.*** By Alfred W. Anthony. *Ibid.*, pp. 73–82. — *Oreortyx picta confinis, Aphelocoma californica obscura, Junco townsendi, Sitta pygmæa leuconucha, Sialia mexicana anabelæ.* See also Auk, VII, 281.

2222. ***General Ornithological Notes. I.*** Edited by Walter E. Bryant. *Ibid.*, pp. 83–90.

2223. ***A Catalogue of the Birds of Lower California, Mexico.*** By Walter E. Bryant. *Ibid.*, pp. 237–320. See Auk, VII, 281.

Proceedings and Transactions of the Royal Society of Canada.

In Vols. I–VIII (1883–1891) there is one contribution to be noted here, No. 2224.

2224. ***Notes on the Birds of Hudson's Bay.*** By Robert Bell. '*Proceedings and Transactions of the Royal Society of Canada*,' **Vol. I**, Section IV, 1883, pp. 49–54.

Reports of the Canadian Geological Survey.

Although these Reports are devoted chiefly to geographical and geological explorations yet they contain a few papers on the plants and animals of the regions explored. In the 'Reports of Progress' dated 1879–1885 and the 'Annual Reports (New Series)', Vols. I–IV, 1886–1890, are the following (Nos. 2225–2227).

2225. ***List of Birds from the Region between Norway House and Forts Churchill and York.*** By Robert Bell. '*Geological and Natural History Survey of Canada. Report of Progress for 1878–79.*' IV. Report on Explorations on the Churchill and Nelson Rivers and around God's and Island Lakes, 1879. Appendix VI, pp. 67–70.

[**Reports of the Canadian Geological Survey**.—Continued.]

2226. *List and Notes of Birds of the Vicinity of Hudson's Bay and Labrador.* By Dr. R. Bell. *Ibid., Report of Progress for* 1882–83–84. VII. Observations on the Geology, Mineralogy, Zoölogy, and Botany of the Labrador Coast, Hudson's Strait and Bay. 1884. Appendix III, pp. 54–56.

2227. *List of Birds Collected at Lake Mistassini, by Jas. M. Macoun, 1885.* By A. P. Low. *Ibid., Annual Report (New Series)*, **Vol. I**. Report of the Mistassini Expedition, 1884–5. 1885. Appendix I, pp. 34–35.

Proceedings of the Canadian Institute.

These Proceedings, a "continuation of 'The Canadian Journal of Science, Literature, and History'," of which they form the 'third series', have contained, in Vols. I–VII (1879–1890), these papers (Nos. 2228–2231).

2228. *The Prairie Chicken or Sharp-tailed Grouse (Pediœcetes phasianellus (Baird))*. By Ernest E. T. Seton [= Ernest E. Thompson]. '*Proceedings of the Canadian Institute, Toronto*,' Third Series, **Vol. I**, 1883, pp. 405–412. — Biographical.

2229. *Some of Our Migratory Birds.* By G. W. Allan. *Ibid.*, **Vol. III**, 1886, pp. 87–100.

2230. *The Mammals and Birds of Prince of Wales Sound, Hudson's Strait.* By F. F. Paine. *Ibid.*, **Vol. V**, 1888, pp. 111–123. — 26 species of birds noted, "during a stay of thirteen months."

2231. *Proceedings of the Ornithological Subsection of the Biological Section of the Canadian Institute.* Edited by Ernest E. Thompson. *Ibid.*, **Vol. VII**, pp. 181–203. — Brief notes on a large number of species, chiefly near Toronto.

Journal of the Cincinnati Society of Natural History.

The Journal of the Cincinnati Society of Natural History, since it was last noticed in these pages (Auk, II, 211) has contained, in Vols. VIII–XIII (April, 1885–Jan., 1891), the following (Nos. 2232–2243).

2232. *The Little Screech Owl.* By John W. Shorten. '*The Journal of the Cincinnati Society of Natural History*,' **Vol. VIII**, No. 1, April, 1885, p. 52. — Numerous in Cincinnati in winter of 1884–85; two thirds of those taken were in the red phase.

2233. *Notes on Food of Raptorial Birds.* By Charles Dury. *Ibid.*, pp. 62–67.

2234. *Papers on the Destruction of Native Birds.* By Charles Dury, William Hubbell Fisher, R. H. Warder, F. W. Langdon, Joseph F. James. *Ibid.*, **Vol. IX**, No. 3, Oct., 1886, pp. 163–224.

2235. *Zoölogical Miscellany.* Edited by William Hubbell Fisher. *Ibid.*, **Vol. X**, No. 1, April, 1887, pp. 49–51. — Short notes, chiefly on Cincinnati birds.

2236. *Ornithological Notes.* By Charles Dury. *Ibid.*, No. 2, July, 1887, pp. 96, 67. — Near Cincinnati.

[**Journal of the Cincinnati Society of Natural History.**—Continued.]

2237. *Migration of Night Hawks.* By Charles Dury. *Ibid.*, No. 3, Oct., 1887, pp. 148, 149.

2238. *The American Crossbill, as to Some of its Habits and its Fondness for Salt.* By William Hubbell Fisher. *Ibid.*, No. 4, Jan., 1888, pp. 203, 204.

2239. *The Canada Grouse. Some Remarks as to its Scarcity, Fearlessness, its Habitat, and its Feeding on the Tamarack.* By William Hubbel Fisher. *Ibid.*, pp. 205, 206.

2240. *Notes Concerning Albinism among Birds.* By Amos W. Butler. *Ibid.*, pp. 214–216.

2241. *Albinos in Cuvier Club Collection.* By Charles Dury. *Ibid.*, pp. 216, 217.

2242. *On the Occurrence in Large Numbers of Seventeen Species of Birds.* By F. W. Langdon. *Ibid.*, **Vol. XII**, Nos. 2 and 3, Oct., 1889, pp. 57–63. — In Ohio.

2243. *Notes on Ohio Birds.* By Charles Dury. *Ibid.*, **Vol. XIII**, No. 2, July, 1890, pp. 93–98.

Proceedings of the Davenport Academy of Natural Sciences.

In Vols. III–V (1879-1892) the one contribution to ornithology is No. 2244.

2244. *Preliminary Annotated Catalogue of the Birds of Iowa.* By Charles R. Keyes and H. S. Williams. '*Proceedings of the Davenport Academy of Natural Sciences*,' **Vol. V**, 1888, pp. 113–161. — See Auk, VI, 332.

Bulletin of the Scientific Laboratories of Denison University.

Vols. I–VI of this publication contain the following (Nos. 2245, 2246).

2245. *The Evening Grosbeak — Hesperiphona vespertina Bonap.* By C. L. Herrick. '*Bulletin of the Scientific Laboratories of Denison University*,' **Vol. I**, Dec., 1885, pp. 5–15. — Chiefly anatomical.

2246. *A Specimen of Hesperiphona vespertina Bonap.* By W. G. Tight. *Ibid.*, **Vol. V**, June, 1890, pp. 22–23.

Journal of the Elisha Mitchell Scientific Society.

In Vols. I–VII (1883–1890) the ornithological papers are these (Nos. 2247, 2248):—

2247. *Preliminary Catalogue of the Birds of North Carolina, with Notes on Some of the Species.* By George F. Atkinson. '*Journal of the Elisha Mitchell Scientific Society*,' **Vol. IV**, Part II, July–Dec., 1887, pp. 44–87. — See Auk, V, 311.

2248. *Soaring of the Turkey Vulture (Cathartes aura).* By Geo. F Atkinson. *Ibid.*, **Vol. V**, Part II, July–Dec., 1888, pp. 59–66.

Proceedings of the Elliott Society of Science and Art.

Since the Elliott Society resumed the publication of its Proceedings in 1885 (Vol. II, p. 17) up to the latest issue seen (Vol. II, p. 200, May, 1888) they have contained the following ornithological matter (Nos. 2249–2257).

2249. *Swainson's Warbler, Helinaia swainsoni, Audubon.* By Arthur T. Wayne. '*Proceedings of the Elliott Society of Science and Art, of Charleston, South Carolina*,' **Vol. II**, Sept., 1886, pp. 96, 97.

2250. *The Prothonotary Warbler, Protonotaria citrea (Bodd.) Baird.* By Arthur T. Wayne. *Ibid.*, Dec., 1886, pp. 112, 113.

2251. *Sterna fluviatilis and Sterna forsteri.* By Ellison A. Smyth, Jr. *Ibid.*, April, 1887, pp. 122, 123.

2252. *Note on Sitta canadensis.* By Ellison A. Smyth, Jr. *Ibid.*, pp. 123, 124. — In South Carolina.

2253. [*Notes on several birds at Charleston, S. C.*] By Ellison A. Smyth, Jr. *Ibid.*, March, 1888, p. 184.

2254. [*Clangula hyemalis at Charleston, S. C.*] By Ellison A. Smyth. *Ibid.*, April, 1888, p. 189.

2255. [*Chaulelasmus streperus at Charleston, S. C.*] By G. Manigault. *Ibid.*

2256. *Notes on Coloration in Sterna maxima.* By Ellison A. Smyth. *Ibid.*, pp. 189–192.

2257. [*Trochilus colubris killed by a Mantis.*] By G. E. Alexander. *Ibid.*, March, 1888, pp. 195, 196.

Journal and Proceedings of the Hamilton Association.

From 1884 to 1890 (Vol. I, Part I, to Part VI, — the division into Volumes seems to have been given up after Vol. II) there are the following papers (Nos. 2258–2260).

2258. *On Birds and Bird Matters.* By Thos. McIlwraith. '*Journal and Proceedings of the Hamilton Association*,' **Vol. I**, pt. II, 1885, pp. 29–47.

2259. *The Birds of Ontario.* By Thomas McIlwraith. *Ibid.*, **Vol. II**, 1886, pp. 43–324, i–vii. — See Auk, IV, 245–249.

2260. *Birds Wintering near Hamilton.* By Thomas McIlwraith. *Ibid.*, pt. VI, 1890, pp. 76–81.

Bulletin of the Illinois State Laboratory of Natural History.

In the Bulletins so far issued (Vol. I–III, 1880–1891) there have appeared the following (Nos. 2261–2265).

2261. *The Food of Birds.* By S. A. Forbes. '*Bulletin of the Illinois State Laboratory of Natural History*,' **Vol. I**, No. 3, Nov., 1880, pp. 80–148. — See Bulletin Nuttall Ornith. Club, VI, 110.

2262. *A Revised Catalogue of the Birds Ascertained to Occur in Illinois.* By Robert Ridgway. *Ibid.*, No. 4, May, 1881, pp. 161–208. — See Bull. Nuttall Ornith. Club, VI, 171.

[**Bulletin of the Illinois State Laboratory of Natural History.**—Continued.]

2263. ***The Regulative Action of Birds Upon Insect Oscillations.*** By S. A. Forbes. *Ibid.*, No. 6, May, 1883, pp. 3–32. — See Bull. Nuttall Ornith. Club, VIII, 105.

2264. ***The Food Relations of the Carabidæ and Coccinellidæ.*** By S. A. Forbes. *Ibid.*, pp. 33–64. — On pages 56–58 are notes of different species of these families eaten by various species of birds.

2265. ***A Preliminary Report on the Animals of the Mississippi Bottoms near Quincy, Illinois, in August, 1888.*** By H. Garman. *Ibid.*, **Vol. III**, Art. IX, Pt. I, pp. 123–184. — Contains, on pp. 131, 132, mention of a few birds. (Also issued separately, paged 1–53, dated 1889.)

Transactions of the Kansas Academy of Science.

Since last noted (Bull. Nuttall Ornith. Club, VIII, 238) Vols. IX–XII (1885–1890) have contained these papers and notes (Nos. 2266–2281).

2266. ***Birds New to the Fauna of Kansas, and Birds Rare in the State.*** By N. S. Goss. '*Transactions of the Kansas Academy of Science*,' **Vol. IX**, 1885, pp. 26, 27.

2267. ***Observations of the Breeding Habits of the American Eared Grebes.*** By N. S. Goss. *Ibid.*, pp. 31–32. — *Colymbus nigricollis californicus.*

2268. ***Notes on the Nesting Habits of the Yellow-throated Vireo.*** By N. S. Goss. *Ibid.*, pp. 33, 34.

2269. ***On the Discovery of a Fossil Bird Track in the Dakota Sandstone.*** By Prof. F. H. Snow. *Ibid.*, **Vol. X**, 1887, pp. 3–6. — See Auk, V, 105.

2270. ***Additions to the Catalogue of Kansas Birds.*** By N. S. Goss. *Ibid.*, pp. 28–31. — See also Auk, III, 114.

2271. ***Additions to the Catalogue of the Birds of Kansas.*** By N. S. Goss. *Ibid.*, pp. 77–80. — See also Auk, IV, 7–11.

2272. ***Ictinia mississipiensis and Ægialitis nivosa Nesting in South-central Kansas.*** By N. S. Goss. *Ibid.*, **Vol. XI**, 1889, p. 11. — See also Auk, IV, 345.

2273. ***Feeding Habits of Pelecanus erythrorhynchos.*** By N. S. Goss. *Ibid.*, pp. 11, 12. — See also Auk, V, 25–27.

2274. ***The Anhinga.*** By N. S. Goss. *Ibid*, pp. 58, 59.

2275. ***The Double-crested Cormorant.*** By N. S. Goss. *Ibid.*, pp. 59, 60.

2276. ***Additions to the Catalogue of the Birds of Kansas.*** By N. S. Goss. *Ibid.*, pp. 60–62.

2277. ***Three New Kansas Birds.*** By Prof. F. H. Snow. *Ibid.*, pp. 62–63.

2278. ***Additions to Kansas Birds.*** By Col. N. S. Goss. *Ibid.*, **Vol. XII**, 1891, p. 24.

2279. ***Correction.*** By N. S. Goss. *Ibid.*, pp. 60, 61.

2280. ***Second Occurrence of the White-faced Glossy Ibis — Plegadis guarauna — in Kansas.*** By N. S. Goss. *Ibid.*, p. 61. — This and the

[**Transactions of the Kansas Academy of Science.**—Continued.]
last are reprinted, without reference to the fact, from 'The Auk' for January, 1891.

2281. *Notes on Some Summer Birds of Estes Park, Colorado.* By Vernon L. Kellogg. *Ibid.*, pp. 86–90.

Transactions of the Meriden Scientific Association.

In Vols. I–IV (1885–1891) there are the following (Nos. 2282 and 2283).

2282. *A List of the Birds of Meriden, Conn.* By Franklin Platt. '*Transactions of the Meriden Scientific Association*,' **Vol. II**, 1887, pp. 30–53. — See Auk, IV, 154.

2283. *A Supplementary List of the Birds of Meriden, Conn.* [etc.]. By Franklin Platt. *Ibid.*, **Vol. III**, 1889, p. 41.

Bulletin of the Minnesota Academy of Natural Sciences.

In Vols. I–III, No. 2 (1878–1891) there is a little ornithological matter (Nos. 2284, 2285).

2284. *The Fauna of Northern Minnesota. Its Traverses and Routes of Migration.* By Charles Hallock. '*Bulletin of the Minnesota Academy of Natural Sciences*,' **Vol. II**, No. 3, April, 1881, pp. 101–110. — Mention of several species of Geese and other water birds on pp. 108–110.

2285. *Notes on the Arrival and Nesting of Birds in the Vicinity of Minneapolis for the Spring of 1887.* By Franklin Benner. *Ibid.*, **Vol. III**, No. 2, pp. 187–191.

Bulletin of the Natural History Society of New Brunswick.

In Bulletins I–IX (1882–1890) there are two ornithological papers (Nos. 2286, 2287).

2286. *Catalogue of the Birds of New Brunswick, with Brief Notes relating to their Migrations, Breeding, Relative Abundance, etc.* By Montague Chamberlain. '*Bulletin of the Natural History Society of New Brunswick*,' **No. I**, 1882. pp. 23–68. — See Bulletin Nuttall Ornith. Club, VII, 176.

2287. *Ornithological Notes.* By Montague Chamberlain. *Ibid.*, **No. II**, 1883, pp. 39–42.

Proceedings of the Newport Natural History Society.

Since last noticed here (Vol. II, p. 372) these 'Proceedings' have contained, in 'Documents' 6 and 7, the following (Nos. 2288–2290).

2288. *Our Birds of Rhode Island.* By James M. Southwick. *Ibid.*, Document 6, 1881, pp. 3–15. — Includes some interesting records.

2289. *The Water Birds of Newport, R. I.* By Charles H. Lawton. *Ibid.*, pp. 16, 17.

2290. *A Catalogue of the Birds of the Virginias.* By Wm. C. Rives. *Ibid.*, Document 7, Oct., 1890. — See Auk, VIII, 105.

Transactions of the New York Academy of Sciences.

Vols. I–IX (1881–1890) have contained these communications concerning birds (Nos. 2291–2296).

2291. *A Discovery by C. C. Trowbridge regarding the Purpose of the Emargination in the Primary Wing Feathers of Certain Birds.* By W. C. [= P] Trowbridge. '*Transactions of the New York Academy of Sciences*,' Vol. VII, 1887–1888, pp. 19–21.

2292. *The Mechanism of Flight in Soaring Birds.* By W. P. Trowbridge, J. S. Newberry, *et. al.* *Ibid.*, pp. 75–78. — Abstract.

2293. *Discussion of the Mechanics of Bird Flight.* *Ibid.*, pp. 80–83. — Abstract of discussion by various persons present at a meeting of the Academy Dec. 19, 1887.

2294. *Soaring of Birds.* By J. B. Holder. *Ibid.*, pp. 83–87.

2295. *On the Structure of Birds in relation to Flight, with Special Reference to Recent Alleged Discoveries in the Mechanism of the Wing.* By J. A. Allen. *Ibid.*, pp. 89–100. — Abstract.— See Auk. V, 418.

2296. *Geographical Variations in the Horned Larks of North America.* By Jonathan Dwight, Jr. *Ibid.*, Vol. IX, 1889–1890, pp. 128–131. — Abstract.

Proceedings and Transactions of the Nova Scotian Institute of Natural Science.

Vols. V–VIII (1879–1890) contain the following (Nos. 2297–2301).

2297. *On the Semi-annual Migration of Sea Fowl in Nova Scotia.* By J. Bernard Gilpin. '*Proceedings and Transactions of the Nova Scotian Institute of Natural Science*,' Vol. V, pt. II, 1880, pp. 138–151.

2298. *On the Birds of Prey of Nova Scotia.* By J. Bernard Gilpin. *Ibid.*, pt. III, 1881, pp. 255–268.

2299. *On the Winter Food of the Partridge and on Partridge Poisoning.* By J. Somers. *Ibid.*, Vol. VI, pt. I, 1883, pp. 78–84.

2300. *Pied or Labrador Duck.* By Andrew Downs. *Ibid.*, pt. IV, 1886, pp. 326, 327.

2301. *Birds of Nova Scotia.* By Andrew Downs. Edited by Harry Piers. *Ibid.*, Vol. VII, pt. II, pp. 142–178. — See Auk, VI, 64.

Proceedings of the Academy of Natural Sciences of Philadelphia.

In the Proceedings of the Philadelphia Academy for 1879–1890 there are a few papers upon birds (Nos. 2302–2306).

2302. *Remarks on Lanius robustus* (*Baird*), *Based Upon an Examination of the Type Specimen.* By Leonhard Stejneger. '*Proceedings of the Academy of Natural Sciences of Philadelphia*,' 1885, pp. 91–96.

2303. *Notes on the Food of Birds.* By C. F. Baker. *Ibid.*, 1889, pp. 266–270. — Upwards of three hundred birds' stomach contents examined, in Florida.

2304. *Hypoderas in the Little Blue Heron.* By Joseph Leidy. *Ibid.*, 1890, p. 63. — A similar parasite also in *Sialia sialis*.

[**Proceedings of the Academy of Natural Sciences of Philidelphia.**—Continued.]

2305. *Catalogue of the Owls in the Collection of the Academy of Natural Sciences of Philadelphia.* By Witmer Stone. *Ibid.*, 1890, pp. 124–131.

2306. *On Birds Collected in Yucatan and Southern Mexico.* By Witmer Stone. *Ibid.*, 1890, pp. 201–218.

Journal of the Trenton Natural History Society.

In Vols. I and II (1886–1891) the following (Nos. 2307 and 2308) are the only ornithological articles. With the beginning of Vol. II (Jan., 1889) the name of the publication was changed to the 'Journal of the New Jersey Natural History Society.'

2307. *Nesting Habits of the Hummingbird, Trochilus colubris.* By Prof. Wm. Macfarland. '*Journal of the Trenton Natural History Society*,' **Vol. I**, No. 2, pp. 55–58.

2308. *Notes on an Intelligent Parrot.* By Dr. T. S. Stevens. *Ibid.*, No. 3, pp. 347–356.

Transactions of Vassar Brothers Institute.

In Vols. III–V (1884-1889 ? — dates of publication not stated) are these (Nos. 2309–2310). For previous reference to these 'Transactions' see Auk, II, 212.

2309. *Some Changes in the Habits of Birds.* By James M. DeGarms. '*Transactions of Vassar Brothers Institute*,' **Vol. III**, Dec., 1884, pp. 81–84.

2310. *Note on the Downy Woodpecker.* By Geo. Tremper. *Ibid.*, p. 84. — Excavating a hole and occupying it "every night during the past winter."

Transactions of the Wagner Free Institute of Science.

In Vols. I–III (1887–1890) the only reference to ornithology is in this paper (No. 2311.)

2311. *Explorations on the West Coast of Florida and in the Okeechobee Wilderness, etc.* By Angelo Heilprin. '*Transactions of the Wagner Free Institute of Science of Philadelphia*,' **Vol. I**, pp. viii, 134, May, 1887. — Occasional mention of birds.

Proceedings of the Biological Society of Washington.

In Vols. I–IV (1882–1890) of these 'Proceedings' there are a number of papers on ornithological subjects. Such as relate to North American birds are as follows (Nos. 2312–2317).

2312. *Descriptions of Some New North American Birds.* By Robert Ridgway. '*Proceedings of the Biological Society of Washington*,' **Vol. II**, 1885, pp. 89–95. — *Parus atricapillus turneri, Psaltriparus minimus*

[**Proceedings of the Biological Society of Washington.**—Continued.]
californicus, Colaptes mexicanus saturatior, Myiarchus mexicanus magister, Myiarchus lawrencei olivascens, Pediœcetes phasianellus campestris, Lophortyx californicus brunnescens, Phalacrocorax dilophus albociliatus. See also Auk, II, 207.

2313. *Notes on Psaltriparus grindæ Belding.* By Robert Ridgway. *Ibid.*, p. 96.

2314. *A Review of the American Crossbills (Loxia) of the L. curvirostra Type.* By Robert Ridgway. *Ibid.*, pp. 101–107. — Names *L. c. bendirei.* See also Auk, II, 206.

2315. *Notes on the Anas hyperboreus, Pall., and Anser albatus, Cass.* By Robert Ridgway. *Ibid.*, pp. 107, 108. — See Auk, II, 207.

2316. *Remarks on the Type Specimens of Muscicapa fulvifrons, Giraud, and Mitrephorus pallescens, Coues.* By Robert Ridgway. *Ibid.*, pp. 108–110. — See Auk, II, 207.

2317. *Note regarding the Earliest Name for Carpodacus hæmorrhous (Wagler).* By Robert Ridgway. *Ibid*, pp. 110–111. — See Auk, II, 207.

Transactions of the Wisconsin Academy of Sciences, Arts, and Letters.

The only papers treating of birds in these 'Transactions' (Vols. IV–VII, 1879–1889) are the following (Nos. 2318 and 2319).

2318. *The Larger Wild Animals that Have Become Extinct in Wisconsin.* By Dr. P. R. Hoy. '*Transactions of the Wisconsin Academy of Sciences, Arts, and Letters,*' **Vol. V**, 1882, pp. 255–257. — Some facts about *Meleagris gallopavo.*

2319. *Migration and Distribution of North American Birds in Brown and Outagamie Counties.* By S. W. Willard. *Ibid.*, **Vol. VI**, 1885, pp. 177–196.

Proceedings of the Wisconsin Natural History Society.

Since last noted here (Bulletin Nuttall Ornith. Club, VII, 117) the only ornithological paper in these Proceedings, up to April, 1889, the latest issue, is No. 2320.

2320. *Man's Influence on the Avifauna of Southeastern Wisconsin.* By Dr. P. R. Hoy. *Ibid.*, March, 1885, pp. 4–9. — C. F. B.

Publications Received. — **Allen**, J. A. The North American Species of *Colaptes*, considered with special reference to the Relationships of *C. auratus* and *C. cafer.* (Bull. Am. Mus. Nat. Hist. IV, No. 1, pp. 21–44.)

Averill, C. K., Jr. List of Birds found in the Vicinity of Bridgeport, Conn. 8vo. pp. 19. Bridgeport, 1892.

Chapman, Frank M. A Preliminary Study of the Grackles of the Subgenus *Quiscalus.* (Bull. Am. Mus. Nat. Hist. IV, No. 1, pp. 1–20.)

Dalgleish, J. J. Notes on the Petrels of Madeira and adjoining Seas. (Proc. Roy. Phys. Soc. Edinb. XI, pp. 27–30.)

Fürbringer, Max. Anatomie der Vögel. Large 4to. pp. 48. II Inter. Orn. Congress. Budapest.

Leverkühn, Paul. (1) August von Pelzeln. (Orn. Monats. des Deutschen Vereins z. Schutze der Vogelwelt, XVI, pp. 394–401.) (2) Ornithologisches aus Lichtenberg's Werken. (Zoolog. Garten, XXXII, pp. 108–139.) (3) Ornithologisches aus Schiltberger's Reise. (Die Schwalbe, XV, No. 13 and 20.)

Lucas. Frederic A. Explorations in Newfoundland and Labrador in 1887, made in connection with the Cruise of the U. S. Fish Commission Schooner Grampus. (Rep. U. S. Nat. Mus. 1888–89, pp. 709–728.)

Oustalet, E. (1) Mission Scientifique du Cap Horn, 1882–83. Tome VI, Zoologie. Oiseaux, par E. Oustalet. 4to, pp 341, pll. 6. Paris, 1891. (2) Description de nouvelles Espèces d'Oiseaux du Tonkin, du Laos et de la Cochinchine. (Bull. Soc. Zool. de France, 1890, pp. 153–160.) (3) Notice sur la Collection d'Oiseaux recueillie par M. Dybowski dans la Sahara. (*Ibid.*, 1891, pp. 59–64.) (4) Description de deux nouvelles Espèces d'Oiseaux de l'Afrique orientale. (Le Naturaliste, Dec. 1890.)

Reichenow, Anton. (1) Ueber eine Vogelsammlung aus Togoland. (Journ. für Orn. 1891, pp. 369–394.) (2) [Neue africanische Vögel.] (Bericht Allgem. Deutsche Orn. Gesellsch. zu Berlin, Jan. und Febr. Sitz.)

Shufeldt, R. W. Concerning the Taxonomy of the North American Pygopodes, based upon their Osteology. (Journ. Anat. and Phys. XXVI, pp. 199–203.)

Stone, Witmer. Catalogue of the Corvidæ, Paradiseidæ and Oriolidæ in the Collection of the Academy of Natural Sciences of Philadelphia. (Proc. Acad. Nat. Sci. Phila. 1891, pp. 441–450.)

American Field, XXXVII, Nos. 1–10.

American Journ. Sci., Jan.–Mch. 1892.

American Naturalist, Dec. 1891.

Annals of Scottish Natural History, I. No. 1, Jan. 1892.

Australian Museum, Records of, I, No. 10, Dec. 1891.

Bulletin Buffalo Soc. Nat. Sci. V, No. 3.

Bulletin Minnesota Acad. Nat. Sci. III, No. 2.

Canadian Record of Science, IV, Nos. 7, 8, July and Oct. 1891.

Collectors' Monthly, III, Nos. 1, 2, Jan. Feb. 1892.

Forest and Stream, XXXVII, Nos. 22–26, XXXVIII, Nos. 1–9.

Humming Bird, The. II, No. 2, Feb. 1892.

International Ornithological Congress. Compte-Rendu. Budapest, 1891. 4to. pp. 229.

Observer, The. II, No. 12, Dec. 1891. III, Nos. 1, 2, Jan. Feb., 1892.

Ornithologisches Jahrbuch, III, No. 1, Jan. 1892.

Ornithologist and Botanist, I, No. 12, Dec. 1891.

Ornithologist and Oölogist, XVII, Nos. 1–3, 1892

Ottawa Naturalist, V, Nos. 9–11, Jan.-Mch. 1892.

Proceedings Acad. Nat. Sci. Phila. 1891, pt. 3, Sept.–Dec.

Proceedings Delaware Valley Orn. Club, Abstract of, for 1890, 1891.

Zoologist, Jan.–Mch. 1892.

GENERAL NOTES.

An Egg of the Great Auk.—Mr. Symington Grieve of Edinburgh, in a recent letter to Capt. J. W. Collins, announces the discovery of one more egg of the Great Auk, "this time in a museum kept in the tower of an English parish church. The egg was labeled 'Penguin,' and the owner of the museum was under the impression that it was the egg of one of the Penguins of the southern hemisphere, until in reading an article in one of the magazines he observed that the Great Auk also was known as the Penguin in the American localities that were frequented by the bird. He had the egg examined by experts who pronounced it undoubtedly an egg of *Alca impennis*. From all that can be discovered of its history it appears in all probability to have come from Newfoundland."—FREDERIC A. LUCAS, *Washington, D. C.*

Wintering of the Canvasback in Arizona.—The winter resorts of this Duck along the Atlantic coast appear to be much more accurately determined than those of either the interior or the west coast of our country. It may be worth recording that the Duck is extremely abundant on various water-courses in Arizona during the winter. A party of my friends who went duck-shooting in January on one of the tributaries of the Rio Verde, not far from Fort Whipple, saw "thousands" of Canvasbacks, and killed about a hundred. Few ducks of any other species were noticed. The market in Prescott has been supplied with Canvasbacks all through the winter, together with various other Ducks, among which I have noticed Green-winged Teal, Sprigtail, Widgeon, Shovelers, Mallards, Gadwalls, and Scaup. A few Swans and Geese also have been brought in, together with many thousands of Gambel's Quail. The latter, the most characteristic game bird of Arizona, still abounds in the immediate vicinity of Prescott, and is taken with comparative ease when the snow is on the ground, though under ordinary circumstances they are among the most difficult of all birds to shoot on the wing with any hope of making a large bag. Their habits in this respect have not improved since I described them in 'The Ibis' about twenty-five years ago.—ELLIOTT COUES, *Fort Whipple, Arizona.*

The Pacific Eider in Kansas.—I desire to announce the capture of a young male of the Pacific Eider (*Somateria v-nigra*). This specimen was killed by A. L. Weidman, a hunter, about six miles from Lawrence along the Kansas River. I think this is the first instance of the capture of this species in the United States east of the Rocky Mountains. The measurements of the specimen are as follows: length, 25.50 inches; extent of wings, 41.00; wing, 11.75; tail, 4.75; culmen, 1.80; tarsus, 2.35; middle toe and claw, 3.25.—F. H. SNOW, *Lawrence, Kansas.*

Anas carolinensis and Gallinago delicata in Winter.— Mr. John B. Rodgers brought into the Quincy Market, Boston, Mass., on February 2, 1892, one Green-winged Teal, and four Wilson's Snipe, which he had shot at West Barnstable, Cape Cod, Mass., probably a day or so before. Both the Teal and the Snipe were very fat.— GEORGE H. MACKAY, *Nantucket, Mass.*

The Migration of Charadrius dominicus in Massachusetts in 1891.— Nantucket Island, August 20, 1891. — First arrival of American Golden Plover late this afternoon, about twenty in the flock. The next flock to appear was a dozen or fifteen on the 28th. Some were heard passing over the town on the night of the 27th. The weather since the 20th had been warm and humid with light southwest wind, with considerable fog which was very thick during the night and late afternoon, clearing up during the daytime. I drove constantly over the Plover ground, but no birds had landed. I saw two and shot one on the 29th.

August 30.—The wind was northeast at daylight and it was raining; later it backed all around the compass to northeast again, raining continuously all day, with considerable wind at times, and at others calm. Some Plover were heard whistling as they passed over the town last night and a very few landed, two or three flocks being seen the next day. August 31, I was on the Plover ground at daylight; the sky was lowering and atmosphere misty, almost rain; wind steady northeast all day. I had anticipated a landing of Plover, but was disappointed, only a few birds were seen. I saw one flock of thirty flying south on migration, high up. Quite a number passed the east side of the island tonight, but none landed. September 1, the weather was about the same as yesterday, and good for landing birds, but none to speak of came down. I saw this morning a flock of at as least one hundred, high up, flying south on migration, also saw flocks eight and thirteen, respectively, which had landed. I was out from early morning until afternoon.

From the last date there was nothing to note until Sept. 6, on which day I was on the Plover ground at daylight; the wind was southwest and there was a dense fog which had prevailed all night, good weather to land the birds; there was a rain squall at 12.30, noon, the wind backed up as far as southeast, and the fog lifted over portions of the island. I saw only four Golden Plover, two of which I shot; no birds were reported as having been seen today.

Sept. 7.—There was quite a hard local northeast rain today, and tonight at about 8.30, a number of flocks of Plover were heard whistling as they passed over the town; none landed.

Sept. 12.—I drove over the western portion of the island; I saw only seven Golden Plover, four of which I shot from my wagon. It was a calm, pleasant day with a little air from the south. One of the above birds was a Palebelly (young), the first shot this season. The stomachs of these birds I sent to New York where they were examined by Mr. Buetenmüller, the entomologist of the American Museum of Natural History, to

whom I am indebted for the following information regarding their contents. In one they are composed almost wholly of the elytra and other hard parts of a small weevil (*Otiorhynchus ovatus*); another had only coarse gravel, the ovipositors of a large ichneumon, and a few fine fragments of other insects; remains of a coleopterous larva were abundant in one or two of the stomachs with unidentifiable parts of a number of other insects.

Sept. 14, Siasconset.—Four good-sized flocks of Golden Plover passed here this morning during a severe rain squall; they were flying on migration; none came down to land; there were about two hundred and fifty birds in the aggregate.

There was nothing to note between the last date and Sept. 25; about sunset on this day two flocks of young birds passed from the east towards the west, very low down, the aggregate numbers of which were estimated at about sixty. They alighted for a few moments on the crest of the outside beach at the south side of the island, and then flew again towards the west, keeping close to the ground.

The result of the season of 1891 shows much favorable weather for landing the birds. It also shows that few birds happened to be passing during such periods, and consequently few were deflected over the island or came down to rest or feed. It bears out my view, before expressed, that these birds *will not stop*, unless compelled by adverse weather.

I have the following note from an acquaintance.—Malpeque, Prince Edward Island, August 24, 1891, the first movement of American Golden Plover today; one hundred and eighteen were seen; none were shot. The weather was like April, wind southeast, first rain, then clear, then rain again in the afternoon. There was no defined large movement after this date, the birds coming along in scattering flocks almost daily. No birds were noted at Tignish (northeast end of the island) until August 31, when a good many were seen. — George H. Mackay, *Nantucket, Mass.*

The Golden Eagle in Pennsylvania. — On Nov. 6, 1891, a Golden Eagle was shot near Manheim, a dozen miles from here, and was brought to me the next day. It was an immature male in good condition. This is the first instance which I have known of the bird's occurrence in this vicinity for thirty-five years. Until about 1856, for many years, a pair is said to have nested every year in the southern part of the county on a lofty, jutting cliff overlooking the Susquehanna River. — M. W. Raub, *Lancaster, Pennsylvania.*

The Golden Eagle in Ohio. — On Nov. 10, 1891, Mr. O. B. Franks, a farmer living about five miles south of Wooster, shot a Golden Eagle (*Aquila chrysaëtos*) from a tree in the vicinity of his house. It was in immature plumage, and upon examination proved to be a male. In its stomach were found the remains of a bird. The species seems sufficiently rare in this region for its occurrence to merit notice. — Harry C. Oberholser, *Wooster, Ohio.*

Nesting of the Golden Eagle in Arizona. — In 1866 I included this Eagle among the birds of Arizona, but was without details of its occurrence in the Territory. Its permanent residence about Fort Whipple is attested by my friend, Mr. H. H. Keays, who possesses two eggs taken by himself from an eyrie on Thumb Butte, overlooking the city of Prescott, March 2, 1891. This butte is the most notable landmark in the immediate vicinity, forming an almost columnar mass of rock on top of a small mountain, reached by a devious and somewhat difficult Indian trail on the southern side. On reaching the top, and looking down a nearly sheer wall for a hundred feet or more, Mr. Keays observed the female Eagle on the nest. At no little risk of his life, he managed to descend to the nest through a sort of crevice in the face of the rock, and with the help of a pine tree that grew there, into whose top he first landed. The eggs were fresh at the date mentioned. The eyrie was a very old one, doubtless resorted to by many successive pairs of Eagles from time out of mind, as attested by its great size, and the quantity of rabbit skulls and other bones of rodents. — ELLIOTT COUES, *Fort Whipple, Arizona.*

Melanerpes carolinus in Madison County, New York, in Winter. — In December, 1885, I saw a Woodpecker which was unfamiliar to me, near Peterboro, Madison Co., N. Y. The bird was on high ground, in the midst of an extensive wood lot of large deciduous trees intermingled with hemlocks and a few white pines. He was very shy, and soon flew to the top of a tall pine from which my shot failed to dislodge him. My next visit to the place was on February 16, 1886. This time I again saw the bird, or one that I immediately recognized as belonging to the same species. On the next day I secured the specimen. It proved to be an adult male *Melanerpes carolinus*. The bird was in good condition, with stomach well filled with fragments of beech nuts.

Peterboro is fourteen miles south of Oneida Lake, and about 900 feet above that body of water. — GERRIT S. MILLER, JR., *Cambridge, Mass.*

The Whippoorwill Wintering near Charleston, South Carolina. — A fine adult male of this bird was brought to me on February 7 of this year. Upon skinning the bird, I was struck by finding it in fine condition. It was very fat and nearly equalled shore birds in this respect. This is certainly the first record of this species wintering in the State, and, as far as I know, the first for the United States. — ARTHUR T. WAYNE, *Mt. Pleasant, South Carolina.*

The Prairie Horned Lark (*Otocoris alpestris praticola*) Breeding in New Hampshire and Massachusetts. — That the Prairie Horned Lark is gradually extending its breeding range eastward, recent records clearly prove. The first account of its breeding in New England appeared in the 'Ornithologist and Oölogist,' Vol. XIV, p. 87, June, 1889, where Mr. C. H.

Parkhill records it as nesting in Cornwall, Vermont. On the 4th of June, 1891, my brother observed two of these birds haunting an old field in the town of Franconia, New Hampshire. The number was afterwards augmented by what were doubtless the second-brood young. He saw them near the same spot as late as the 21st of July. Mr. J. B. Grimes, an intelligent observer of birds in North Adams, Massachusetts, informs me that the Prairie Horned Lark breeds in North Adams and Williamstown at the base of the Saddleback Mountain range and he has shown me two specimens killed there the last of March, 1890, and the 13th of April, 1891 — the breeding season of the bird in this latitude. — WALTER FAXON, *Museum of Comparative Zoölogy, Cambridge, Mass.*

The Prairie Horned Lark in Northeastern Pennsylvania. — I shot a typical specimen of *Otocoris alpestris praticola*, June 12, 1891, at Athens, Bradford Co., Pennsylvania. Another of the same species accompanied it. Mr. W. K. Park had informed me that a few were to be found every summer in the vicinity, and that he thought he could show me some. He was as good as his word, and the breeding range of this species in Pennsylvania must now be extended much further eastward than the character of the country would indicate. — JONATHAN DWIGHT, JR., *New York City.*

A Correction.—In my paper on *Molothrus* (Auk, 1891, p. 344) an unfortunate printer's error in the key to the species is liable to perplex anyone using it in the determination of specimens. *M. cabanisii* is there placed under the division '*B*,' while it should be placed under division '*A*' as a third subdivision, and should bear the heading, '*c*' instead of '*b*' as printed.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

Some Bird Notes from Litchfield, Connecticut.—Strix pratincola. —On the 28th of August, 1891, a Barn Owl was shot while flying over a small pond near the village, at dusk. This is a rare bird in Connecticut, and it is apparently the first record for this part of the State. It is now in my collection.

Turdus aonalaschkæ pallasii.—I have recorded, on July 2, two birds flying along the Bantam,— a good-sized brook near the village,— one of which on being shot proved to be a young Hermit Thrush in the speckled plumage. The date and markings suggest the probablity that it was one of a brood reared in the neighborhood.

Cistothorus stellaris.—The occurrence in this locality of this species, breeding seems also worthy of note.

Geothlypis agilis was present in unusually large numbers between September 18 and October 5. I have no record of it for this part of the State prior to this fall, but between the above dates I met with from one to four almost daily, which numbers, considering the extreme shyness manifested by them, would indicate comparative abundance.—LEWIS B. WOODRUFF, *New York City.*

Some Birds Recently Added to the Collection of the New York State Museum. — During the year closing Sept. 30, 1891, the following interesting birds have been added to the New York State Museum's collection.

A pair of Evening Grosbeaks (*Coccothraustes vespertina*). These birds are interesting because they were shot at Wayland, Steuben Co., N. Y., in February, 1890. The locality is an unusual one for the species. The irruption of the species into the State of New York from the westward in 1890 has already been noticed in 'Forest and Stream.'

A pair of Heath Hens (*Tympanuchus cupido*). The female was taken on the Island of Martha's Vineyard, on December 24 or 25, 1890. Her measurements, taken after mounting, are: length, 15 inches; length of wing, 8.50 inches. The male was taken at the same locality on December 22, 1890. His measurements, taken while in the flesh, were reported to me as follows: "Length, 16 inches; expanse, 28¾ inches; wing, 12½ inches." The length of the wing, as given above, means the length of the expanded wing. The length of the wing from the carpal joint to the end of the longest primary is 8.75 inches (measured on the mounted bird). His crop was reported to contain leaves and grasshoppers.

A Turkey Buzzard (*Carthartes aura*), an adult, probably a male, shot in the town of Clarendon, Orleans Co., N. Y., on July 18, 1891, by Mr. A. E. Snyder. Attention is called to this specimen because of the locality in which it was taken. The Turkey Buzzard is said to be of rare occurrence so far north.

Last spring Mr. Frank A. Ward of Rochester told me that he had in his possession a bird, taken near Lake Ontario, which he supposed to be a Harlan's Hawk. He afterwards changed his mind about the name of the bird, as he sent it to me without a name. It proved to be a rather immature specimen of the Black Gyrfalcon (*Falco rusticolus obsoletus*). Mr. Austin F. Park of Troy has since seen the specimen and confirms my opinion that the bird is a Black Gyrfalcon. It is a female, and was shot near Lake Ontario, in Monroe Co., N. Y., in October, 1890. The label sent with the specimen contains the following field-notes. — "Length, 22½ inches; tail, 9½ inches; wing, 15½ inches; spread 51 inches. Cere and feet gray (not so bright a gray as in the Osprey)." This is the only specimen of Black Gyrfalcon that I have ever had an opportunity to examine. Its color is very dark. Dr. F. J. H. Merrill of the New York State Museum, who has seen the specimen exhibited in the U. S. National Museum, assures me that our specimen is several shades darker. — Wm. B. Marshall, *New York State Museum, Albany, N. Y.*

Winter Birds of Cape May, New Jersey. — In the early part of the present year Mr. S. N. Rhoads and myself spent a few days (January 26–29) at Cape May City, N. J., with the object of investigating the avifauna of the vicinity. The weather at the time of our visit was extremely cold, and of course no migration had begun at this early date, so that we could without question consider all the species found by us as regular

winter residents in that vicinity. Of the list of thirty-four species observed by us the following seem worthy of note.

Otocoris alpestris. — Immense flocks.

Molothrus ater. — A small flock.

Poocætes gramineus. — Flock of a dozen or more.

Ammodramus princeps. — Two shot on the sand-hills, and there were no doubt others, as we failed to make a very careful search for them.

Ammodramus sandwichensis savanna. — Common in flocks.

Spizella pusilla. — Several flocks.

Melospiza georgiana. — Common on the marshes.

Passerella iliaca. — Several seen.

Dendroica coronata. — Tolerably common among the pines.

Cistothorus stellaris. — Several secured on the marshes.

Cistothorus palustris. — Tolerably common in cat-tail swamps.

Parus carolinensis. — This was the only Chickadee to be found; indeed I have never seen any *P. atricapillus* from southern New Jersey.

Among other species may be mentioned *Cathartes aura*, *Colaptes auratus*, *Agelaius phœniceus*, *Sturnella magna*, *Spinus pinus*, *Cardinalis cardinalis*, *Thryothorus ludovicianus*, *Merula migratoria*, *Sialia sialis*, most of which are regular winter residents in the vicinity of Philadelphia. — WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

Notes on a Few Louisiana Birds. — The following observations were made at Calumet Plantation, Parish of St. Mary's, Louisiana, during October, November and December, 1889; July, 1890, to March, 1891; and June to November, 1891; and relate to a narrow strip of territory extending along both banks of Bayou Teche, near the town of Patterson. Other interests have prevented as yet very close attention to the birds. The following notes are offered for what they may be worth, in the hope that they will be followed later by a more complete list of the birds of this very interesting region.

Ægialitis vocifera. — Resident throughout the year, but locally rare in the breeding season. Very abundant in fall and winter, first appearing in any numbers about the last of September. Frequents open fields and margins of waterways, and the characteristic cry is often heard late into the night.

Colinus virginianus. — Very common at all seasons, breeding locally in cane and corn fields.

Zenaidura macroura. — Exceedingly common in fall and winter when pursued as game. Lingers late, and a few breed.

Cathartes aura. — Common.

Catharista atrata. — Common. It is interesting to note that this and the foregoing species seem to alternate, each occupying the field for a time very nearly to the exclusion of the other. The Turkey Buzzard, in spring and early summer, is not very common, and the Carrion Crow is quite rarely seen. As the season advances, the former species soon becomes abundant, while comparatively few of the latter are among them.

In September there seems to be an increase of the Carrion Crows, and a diminution of the Turkey Buzzards, and gradually these are less and less often observed, until by November they are comparatively scarce, remaining so through the rest of the winter.

Parabuteo unicinctus harrisi.— Fairly common in winter, hovering low over open land. One specimen taken in October.

Falco columbarius.— Not very many noted. One example taken Oct. 5, 1891.

Falco sparverius.— Very numerous from September to March. Have never seen one here in summer.

Syrnium nebulosum alleni.— Quite common. This is locally the commonest hooting Owl about houses. Between August and November, 1891, five of these Owls were shot in the grounds about the plantation residence.

Coccyzus americanus.— Common in summer, and breeds locally in some numbers.

Sphyrapicus varius.— One specimen shot in November, 1890, in the swamp.

Colaptes auratus.— Common in winter and very abundant in early spring. Confined strictly to the swamp lands. Not very many noted in summer.

Chordeiles virginianus.— Abundant in summer, breeding in grassy fields.

Chætura pelagica.— Not at all common, even as a migrant. A few noted in April and in August, 1891.

Trochilus colubris.— A small number breed, but from the first week in August onward thousands are present, staying until late in October, and always to be found as long as the flowers of the cypress vine and trumpet creeper bloom.

Tyrannus tyrannus.— Very scarce locally, the only two specimens noted being seen on July 11 and 20, 1891. Probably more common in higher districts within a few miles.

Sayornis phœbe.— Rather common and breeds.

Agelaius phœniceus.— One of the most abundant of local breeders. About the middle of August this species, as also the Great-tailed Grackle, becomes temporarily scarce, presumably leaving for the better feeding grounds of the rice districts further northward. Returning later, much swelled in numbers, they continue abundant until about April first, when the departure of migrants thins the ranks appreciably.

Scolecophagus carolinus.— An abundant spring and fall migrant. A female secured from a flock seen Jan. 19, 1891. This species, when here, does not associate with other Blackbirds.

Passerina ciris.— Very abundant. One of the few birds breeding in the cane fields.

Progne subis.— Common from April to August, breeding wherever boxes or gourds are prepared for them. They generally disappear quite early in the autumn; the last brood is usually fledged by the middle of August.

Chelidon erythrogaster.— Fairly common as a spring and fall migrant.

Tachycineta bicolor.— Like the preceding species, but more abundant and remaining for a longer period in the fall. Flights noted as late as November 25.

Merula migratoria.— Abundant in flocks during winter. Sometimes lingers as late as March 17. Is hunted as game while here, and soon becomes very shy of approach.

Passer domesticus.— This introduced species has appeared in this locality within the past five years, and has increased in numbers so rapidly that at the present time it is as common as in any northern town. Particularly abundant in summer, nesting in colonies among the live-oaks and using the common long moss with a few feathers as building material. —FRANK E. COOMBS, *Patterson, La.*

An Overlooked Volume. — In the Bibliographical Appendix to Dr. Coues's 'Birds of the Colorado Valley,' I can find no reference to a small volume in my library, a short account of which will doubtless be of interest to the students of Kentucky ornithology. It consists of a series of letters by G. Imlay, written and published during the latter part of the last century, entitled, "History of Kentucky,"* and containing among other things a catalogue of the mammals and birds of the State. Some forty-two species of the former are given, and their distribution is defined by the degrees of latitude between which they are common. The list of birds is considerably larger, a hundred and twenty-eight species in all being enumerated, for the most part under the Linnæan as well as the vernacular names. Unfortunately all reference to the distribution and abundance of the various species is omitted, thus detracting much from the value of the list. The Carolina Parrakeet (*Conurus carolinensis*) and the "Large pouch pelican," (*Pelecanus fuscus?*) are among the birds mentioned.— J. H. PLEASANTS, JR., *Baltimore, Md.*

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*A | Topographical Description | of the | Western Territory | of | North America; | containing | a succinct account | of its | Climate, Natural History, Population, | Agriculture, Manners and Customs, | with | an ample description of the several divi- | sions into which that country is divided. | And an accurate Statement of the various Tribes of | Indians that inhabit the Frontier Country, | to which is annexed | a delineation of the laws and government | of the | State of Kentucky, | tending to shew the probable rise and | grandeur of the American Empire, | in a series of letters to a friend in | England. | By G. Imlay, | A Captain in the American Army during the late War, and a Commissioner | for laying out Land in the Back Settlements. | New-York: | printed | by Samuel Campbell, | no. 37, Hanover Square: | MDCCXCIII. 2(?) vols. 8vo. Vol. I, pp. (i)–(xxiii), [25]–[260], map. Mammals and birds, vol. I, pp. [202]–[209].

NOTES AND NEWS.

THE BLACK-FRONTED WARBLER (*Dendroica nigrifrons* Brewst.) figured in the January number of the present volume of 'The Auk', was described by Mr. Brewster (Auk, VI, Jan. 1889, p. 94) from specimens taken at Pinos Altos, Chihuahua, Mexico, in June and July, 1888, by Mr. M. Abbott Frazar, and is one of Mr. Frazar's most interesting discoveries in the Sierra Madre region of Mexico. This forms one of the series of species which Mr. Brewster will notice more at length in some future number of this journal. By inadvertance no reference to the plate was given in the January issue.

The AUDUBON MONUMENT COMMITTEE of the New York Academy of Sciences is able to report subscriptions to the amount of $9000, nearly one half of which, however, is contingent upon the raising of the total sum of $10,000, as originally proposed. Under these conditions it should be easy to secure promptly the remaining one thousand dollars, which the committee is sanguine will soon be forthcoming. The erection of the monument now seems assured, and it is expected that the work will be completed by October of the present year.

The unveiling of the monument will be attended with appropriate public exercises, including an oration by some prominent representative of the American Ornithologists' Union. It is hoped that those who may have withheld their contributions through fear of the ultimate failure of the project will now lend a hand in completing the amount necessary to give the Committee the required sum for successfully consummating their labor of love. Remittances may be sent to Mr. William Dutcher, treasurer of the A. O. U. Audubon Monument Committee, 525 Manhattan Ave., New York City, or to Dr. N. L. Britton, Treasurer of the Academy of Sciences Committee, Columbia College, New York City.

THE WESTERN PENNSYLVANIA ORNITHOLOGICAL ASSOCIATION was organized in Alleghany City, Pa., Dec. 30, 1891, with the following officers: President, Dr. A. D. Johnston, of Alleghany; Vice-President, Thomas Harper, of Alleghany; Secretary and Treasurer, H. H. Wickham, of Beaver. The Society has already a membership of twenty-six persons, who propose to study carefully the avifauna of their respective districts, with a view to elucidating the ornithology of the western half of the State of Pennsylvania. Such organized effort is always a subject of congratulation, and much benefit must result not only to those personally engaged in such work but also to the science of ornithology.

A MONOGRAPH of the Birds of Paradise, by Dr. R. Bowdler Sharp, of the British Museum, is announced as in course of preparation. It will be published by Henry Sothern & Co., 17 Piccadilly, London, in six parts,

forming one volume imperial folio, at a cost to subscribers of three guineas per part. Most of the species have already been figured in Gould's 'Birds of New Guinea,' and where practicable, Gould's plates will be utilized, but in many cases the species will be re-drawn, and wholly new plates added of the many striking species only recently described. Each will contain ten magnificent hand-colored illustrations, and the edition will be limited to 350 copies.

Dr. EDGAR A. MEARNS, U. S. A., has been detailed as surgeon and naturalist to the United States and Mexican Boundary Commission, which is to re-locate and permanently mark the international boundary line. The Commission left El Paso early in March, and the march to the Pacific coast and return is expected to occupy rather more than two years. As the survey will thus move slowly, Dr. Mearns will doubtless have excellent opportunity for field work and collecting, and in view of his boundless energy and untiring industry we may safely look forward to important scientific results from his labors.

MR. S. N. RHOADS, of Philadelphia, has started on a six months' collecting trip to British Columbia. He intends first to spend a month cruising in Puget Sound and along the northeast coast of Vancouver Island, and then to visit the Cariboo Lake region of central British Columbia, and thence work southward to the Columbia River, along the western slope of the Selkirks, as far as the United States boundary. He will devote himself especially to birds and mammals.

MR. ROBERT C. L. PERKINS of London, England, recently sailed for the Hawaiian Islands, via New York, to spend several years in a thorough exploration of the bird and insect life of this group of islands, where in these departments of zoölogy much still remains to be done. Notwithstanding the attention of late given to the birds of the Hawaiian group, it is believed a rich harvest still remains ungathered.

CUBA seems just now to be attracting to an unusual degree the attention of American ornithologists. In February Mr. Frank M. Chapman, of the American Museum of Natural History, began a two months' exploration of portions of the southern coast of the island, and Mr. C. B. Cory, with a trained assistant, has resumed his field investigations of the Cuban avifauna.

Mr. W. E. D. SCOTT selected the vicinity of Fort Myers, Florida as his field for ornithological work during the past winter, he reaching Fort Myers the last of November. His explorations of this slightly known field have been attended with interesting results, which later will be made known to the readers of 'The Auk.'